THE TRANSACTIONS

EDINBURGH OBSTETRICAL SOCIETY.

VOL. XI.

PREFACE.

This, the eleventh volume of the Society's Transactions, contains
a record of its proceedings during the Session 1885–86.

In it, as in former volumes, the views brought forward in the
papers are to be considered as those of the writers themselves,
and not as those of the Society as a body.

November 1886.

EDINBURGH OBSTETRICAL SOCIETY.

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LIST OF PRESIDENTS AND VICE-PRESIDENTS OF THE SOCIETY.

Year.	Presidents.	Vice-Presidents.	
1840–41.	Dr William Beilby.	Dr J. Y. Simpson.	Dr Alex. Ziegler.
1842.	Dr J. Y. Simpson.	Dr J. Cowan, R.N.	Dr Fairbairn.
1843.	Do.	Dr Charles Ransford.	Dr R. B. Malcolm.
1844.	Do.	Dr Charles Bell.	John Kennedy, Esq.
1845–47.	Do.	Dr John Moir.	Dr T. H. Pattison.
1848.	Do.	Dr Beilby.	Dr T. Graham Weir.
1849–53.	Do.	Dr Malcolm.	Dr Moir.
1854–55.	Do.	Dr Weir.	Dr Moir.
1856–57.	Do.	Dr W. Cumming.	Dr A. Thomson.
1858–59.	Dr John Moir.	Dr T. H. Pattison.	Dr David Wilson.
1860–61.	Dr Alex. Keiller.	Dr T. Graham Weir.	Dr George S. Keith.
1862–63.	Dr T. H. Pattison.	Dr T. Graham Weir.	Dr Alex. Keiller.
1864–65.	Dr T. Graham Weir.	Dr T. H. Pattison.	W. S. Carmichael, Esq.
1866–67.	Sir J. Y. Simpson, Bt.	Dr Burn.	Dr Charles Bell.
1868–69.	Dr John Burn.	Dr Bryce.	Dr J. A. Sidey.
1870–71.	Dr Charles Bell.	Dr Menzies.	Dr L. R. Thomson.
1872–73.	Dr L. R. Thomson.	Dr A. R. Simpson.	Dr J. Matthews Duncan.
1874–75.	Dr Matthews Duncan.	Dr Angus Macdonald.	Dr R. Peel Ritchie.
1876–77.	Dr A. R. Simpson.	Dr James Young.	Dr Alex. Milne.
1878–79.	Dr David Wilson.	Dr R. Peel Ritchie.	Dr Angus Macdonald.
1880–81.	Dr Angus Macdonald.	Dr A. R. Simpson.	Dr Robert Bruce.
1882–83.	Dr A. R. Simpson.	Dr J. Carmichael.	Dr J. Halliday Croom.
1884–85.	Dr John Connel.	Dr Angus Macdonald.	Dr Charles E. Underhill. Dr William Ziegler.
1885–86.	Dr J. Halliday Croom.	Prof. A. R. Simpson.	Dr Leith Napier.

LIST OF FELLOWS OF THE SOCIETY.

HONORARY FELLOWS.

1859 Barker, Fordyce, LL.D., New York.
1882 Barnes, Dr Robert, London.
1882 Battey, Dr R., Rome, Georgia.
1882 Bennet, Dr J. Henry, Weybridge.
1886 Bozeman, Dr Nathan, New York.
1864 Braun, Professor Carl, Vienna.
1886 Breisky, Professor A., Prague.
1882 Byford, Professor, Chicago.

1886 Chiara, Professor, Domenico, Florence.
1882 Clay, Dr Charles, Manchester.
1864 Crédé, Professor, Leipzig.

1864 Denham, Dr, Dublin.
1877 Duncan, Dr J. Matthews, London.

1882 Emmet, Dr, New York.

1864 Faye, Professor, Christiania.
1882 Freund, Professor, Strassburg.

1882 Goodell, Professor, Philadelphia.

1882 Hegar, Professor, Freiburg.
1882 Hicks, Dr J. Braxton, London.

1869 Johnston, Dr George, Dublin.

1886 Keith, Dr Thomas, Edinburgh.

1882 Litzmann, Dr, Kiel.

1851 Oldham, Dr Henry, London.

1882 Pajot, Professor, Paris.
1882 Parvin, Professor, Philadelphia.
1882 Porro, Professor, Milan.

1864 Scanzoni, Professor von, Würtzburg.
1872 Schroeder, Professor, Berlin.
1882 Schultze, Professor B. S., Jena.
1882 Spaeth, Professor, Vienna.

1882 Stadtfeldt, Professor, Copenhagen.
1864 Stolz, Professor, Nancy.
1864 Storer, Professor, Boston, U.S.

1882 Tarnier, Professor, Paris.
1882 Thomas, Professor T. G., New York.

1882 Tibone, Professor, Turin.
1876 Turner, Professor Sir W., Edinburgh.

1882 Wasseige, Professor, Liége.
1864 West, Dr Charles, London.
1882 Winckel, Professor, Munich.

CORRESPONDING FELLOWS.

1868 Aitchison, Dr James E. T., H.M. Bengal Army.
1864 Aitken, Professor, Netley.
1867 Aitken, Dr L., Rome.
1848 Allen, Mr Edward, York.
1857 Archibald, Dr D., St Andrews.
1857 Aveling, Dr James H., London.

1863 Belgrave, Dr, Sydney.
1869 Bonnar, Dr G. L., Natal.
1880 Bosch, Dr Van Den, Liége.
1873 Boyd, Dr John, Slamannan.
1863 Brown, Dr R. C., Preston.
1863 Burton, Dr John, Kelso.

1882 Carter, Dr J. T., Glasgow.
1859 Cayzer, Mr Thomas, Liverpool.
1866 Charles, Dr T. Edmonstone, Cannes.
1858 Coghill, Dr J. G. S., Ventnor.

1869 Davies, Mr Thos., Colwyn Bay.
1862 Dickson, Dr, Constantinople.
1873 Donovan, Mr W., Birmingham.
1851 Drummond, Dr James, Nice.

1877 Engelmann, Dr G., Kreuznach.

1859 Figg, Mr E. G., Australia.
1864 Finlay, Dr R. B., M.P., London.
1864 Furley, Mr R. C., London.

1863 Gordon, Mr P., Juniper Green.
1868 Grenser, Dr Paul W. T., Dresden.
1864 Grévé, Dr, Norway.
1875 Groesbeck, Dr Hermann J., New York.

1853 Hall, Dr D., Montreal.
1848 Hartmann, Dr, St Petersburg.
1870 Haynes, Dr Stanley, Malvern.
1880 Helme, Dr J. M., Rusholme.
1865 Henderson, Dr E., China.
1849 Higgins, Dr Chas. H., Birkenhead.
1866 Hubbard, Prof., Connecticut.
1882 Husband, Dr H. Aubrey, Manitoba.

1871 Johnston, Dr A. C., R.N., Aberlady.

1845 Keith, Dr George S., Currie.

1867 Kingston, Dr, Montreal.
1874 Kleinwächter, Prof. L., Grätz.
1865 Krassowski, Professor, St Petersburg.

1871 Lambert, Dr, Paris.
1849 Lawrence, Dr Samuel, Montrose.
1862 Leishman, Professor, Glasgow.
1867 Lilburne, Dr James, R.N., Milnathort.
1867 Lord, Dr Richard, London.
1864 Lusk, Professor, New York.

1879 Machattie, Dr Thomas A., Australia.
1859 Macdonald, Dr F. R., Inveraray.
1878 Macdougall, Dr John A., Carlisle.
1869 Macfarlane, Dr A. W., Kilmarnock.
1862 Mackay, Dr M. A., Canada.
1870 M'Kendrick, Prof., Glasgow.
1869 M'Millan, Dr T. L., Australia.
1871 Madden, Dr T. More, Dublin.
1864 Main, Dr William, Birkenhead.
1866 Martin, Dr Karl, Berlin.
1860 Martine, Dr William, Haddington.
1882 Maslovsky, Dr, St Petersburg.
1860 Milburn, Dr George, London.
1861 Mitchell, Dr Arthur, Edinburgh.
1877 Moolman, Dr Henry, South Africa.
1869 Mossop, Mr Isaac, Bradford.
1878 Mundé, Dr Paul F., New York.
1870 Munro, Dr Æneas, London.
1860 Murray, Dr G. C. P., London.
1859 Myrtle, Dr A. S., Harrogate.

1849 Norris, Mr H., Petherton.

1857 Parker, Dr, Nova Scotia.
1861 Paterson, Dr G. K. H., Perth.
1869 Paton, Dr J. W., Rockferry.
1865 Phillippo, Dr J. C., Jamaica.
1853 Priestley, Dr W. O., London.

1880 Reid, Dr James More, Aldershot.
1863 Ropes, Dr, Boston, U.S.A.

1864 Sanderson, Dr A. M., Musselburgh.
1878 Serdukoff, Dr A., St Petersburg.
1848 Shortridge, Mr Sam, Greenock.

1856 Skinner, Dr T., London.
1873 Slavjansky, Professor, St Petersburg.
1869 Smith, Dr Protheroe, London.
1861 Stephenson, Professor W., Aberdeen.
1854 Storer, Dr H., Boston, U.S.A.
1875 Sutugin, Dr V., St Petersburg.

1875 Tait, Mr Lawson, Birmingham.
1867 Thomson, Mr W., Wrenbury.

1880 Turner, Dr William, Gibraltar.

1861 Veale, Dr H. R. L., Royal Artillery.

1872 Wallace, Dr John, Liverpool.
1863 Watson, Dr W., Montrose.
1840 White, Dr F. I., Perth.
1864 Whiteford, Dr James, Greenock.
1871 Wiltshire, Dr Alfred, London.
1865 Wollowicz, Dr C., St Petersburg.

ORDINARY FELLOWS.

1879 Adam, Dr George Rothwell, 52 Powlett Street, East Melbourne.
1869 Affleck, Dr J. O., 38 Heriot Row.
1886 Aikman, Dr Alfred, 12 Charlotte Street, Hull.
1886 Aitchison, Dr R. S., 74 Great King Street.
1882 Alexander, Mr W. B., 8 Blenheim Place.
1868 Andrew, Dr James, 2 Atholl Cres.
1885 Anglin, Dr W. G., Earl St., Kingston, Ontario.
1877 Archibald, Dr J., Dr Craig's, 7 Bruntsfield Place.
1884 Arnott, Dr James, Surgeon-Major, care of Messrs King, King, & Co., Bombay.
1883 Astley, Dr T. Duckingfield, Quyon, Ottawa, Canada.

1880 Badger, Dr W., Penicuik.
1877 Balfour, Dr Andrew, 12 Abercorn Terrace, Portobello.
1847 Balfour, Dr G. W., 17 Walker St.
1884 Balfour, Mr J. Craig, 25 Minto Street.
1855 Balfour, Dr T. A. G., 51 George Sq.
1870 Ballantyne, Dr A., Dalkeith.
1883 Ballantyne, D. J. W., 50 Queen Street.
1879 Barbour, Dr A. H. Freeland, 24 Melville Street.
1885 Beatty, Mr W. J., Stockton-on-Tees.
1885 Bell, Dr James L., Driffield, Yorkshire.
1878 Bell, Dr Robert, 29 Lynedoch St., Glasgow, W.
1877 Bentley, Mr G. H., Kirkliston.
1881 Black, Dr Alex., 8 St Vincent St.
1863 Black, Dr J. Watt, 15 Clarges St., Piccadilly, London, W.
1876 Bleloch, Dr A., 2 Lonsdale Terrace.
1868 Bonthron, Dr A., West Linton.
1869 Bookless, Dr James P., 12 Mansel Villas, Wimbledon Hill, Surrey.

1882 Bourne, Dr C. Harper, Ramsgate, Bridgetown, Barbados.
1883 Bowman, Dr A. Stuart, Archerfield, Singleton, N. S. Wales.
1883 Brewis, Dr N. T., 59 Queen Street.
1880 Brock, Dr W. J., Rouxville, Orange Free State, South Africa.
1881 Brodie, Dr W. Haig, Farnham, Surrey.
1858 Bruce, Dr Robert, 12 York Place.
1877 Buist, Dr J. W., 1 Clifton Terrace.

1882 Calder, Dr H. L., 42 Leith Walk.
1885 Campbell, Dr Alexander, 15 Airlie Place, Dundee.
1862 Cappie, Dr James, 47 Lauriston Place.
1871 Carmichael, Dr James, 22 Northumberland Street.
1881 Chapman, Dr J. Milne, 7 Ardross Terrace, Inverness.
1875 Church, Dr H. M., 36 George Sq.
1883 Collie, Dr Robert J., Rectory House, High Street West, Sunderland.
1869 Connel, Dr J., Peebles.
1876 Cox, Dr Joshua J., Elsinore, Gildabrook Road, Eccles.
1870 Craig, Dr Wm., 7 Bruntsfield Place.
1870 Croom, Dr J. Halliday, 25 Charlotte Square.
1878 Croudace, Mr J. H., 56 Westgate, Burnley, Lancashire.
1885 Cruickshank, Dr B., Nairn.
1885 Cumming, Dr A. S., 18 Ainslie Pl.
1882 Currie, Dr A. S., Lydney, Gloucestershire.

1884 Darling, Dr J. Brown, 20 Waterloo Place.
1879 Davidson, Dr Alexander, 280 King Street W., Toronto, Canada.
1882 Deverell, Dr H. C., 44 Carlyle Pl.
1867 Dickson, Dr George, 9 India Street.
1879 Duncan, Dr A. J., 144 Nethergate, Dundee.

1870 Duncanson, Dr J. J. Kirk, 22 Drumsheugh Gardens.
1884 Dunlop, Dr H. M., 20 Abercromby Place.
1876 Dunsmure, Dr J., 53 Queen Street.

1879 Elder, Mr W. Nicol, 10 West Maitland Street.

1884 Felkin, Dr R. W., 20 Alva Street.
1885 Fenwick, Dr Kenneth N., 141 King Street, Kingston, Canada.
1885 Ferguson, Dr J. Haig, 6 Maitland St.
1871 Fergusson, Dr Alex., Peebles.
1885 Fernandez, Mr L. J., 3 Circular Road, Alipur, Calcutta.
1880 Finlay, Dr W. A., St Helen's, Russell Place, Trinity.
1878 Foulis, Dr James, 34 Heriot Row.
1883 Fraser, Dr F. W. Dyce, 20 Chester Street.
1880 Fraser, Mr J. Joynor, Hessle, Hull.
1879 Freeland, Dr Richard, Broxburn.

1885 Gayton, Dr William, Bartram Lodge, Fleet Road, Hampstead, London, N.W.
1885 Gemmell, Dr J. E., Royal Infirmary, Liverpool.
1883 Gibson, Dr A. Murray, Portobello.
1882 Gilmour, Mr T. F., 231 Paisley Road W., Glasgow.
1879 Glaister, Dr John, 5 Grafton Place, Grafton Square, Glasgow.
1885 Gracie, Mr C. B., Buccleuch Villa, Burntisland.
1877 Grasett, Dr F. L., 154 King Street W., Toronto, Canada.
1879 Greig, Dr David, 25 Tay Street, Dundee.

1879 Hamilton, Dr J. R., Hawick.
1886 Hamp, Mr J. Walton, Penn Road, Wolverhampton.
1886 Hardcastle, Dr H. M., 52 New Bridge St., Newcastle-on-Tyne.
1870 Hardie, Dr Thomas, 10 John's Place, Leith.
1877 Hart, Dr D. Berry. 4 Wemyss Place.
1884 Haultain, Dr F. W. N., 27 Northumberland Street.
1879 Hay, Dr Henry, 7 Brandon Street.
1885 Helme, Dr T. A., Royal Infirmary.
1857 Henderson, Dr John, 7 John's Place, Leith.
1881 Hewetson, Dr James, Holmfield, Reigate.
1882 Hillier, Dr A. P., Fort Glamorgan, East London, Cape Colony.
1884 Hooper, Mr J. W. D., Lying-in Hospital, Melbourne.
1885 Horsley, Dr R. E., 13 Great Stuart Street.
1881 Hunter, Dr George, Linlithgow.

1881 Hurst, Dr George, 28 College Street, Hyde Park, Sydney, N.S.W.
1857 Husband, Dr William, 28 Clarence Street.
1882 Huxtable, Dr L. R, Merimbula, 99 Priory Road, West Hampstead, London, N.W.
1874 Hyslop, Dr J. M'A., 22 Palmerston Place.

1866 Jamieson, Dr Jas., 43 George Square.
1877 Jamieson, Dr W. A., 26 Rutland St.
1878 Jardine, Dr A., North Park, Motherwell.
1871 Johnston, Dr W., Stirling.
1882 Johnston, Surgeon-Major Wilson, 19th Reg., Ferozepore, India.
1885 Jordan, Dr J. Gregory, 32 Guilford Street, London, W.C.

1847 Keiller, Dr A., 21 Queen Street.
1883 Keith, Dr Skene, 2 North Charlotte Street.
1881 Kennedy, Dr W. Jackson, Kirkcaldy.
1884 King, Dr J. K., The Clifton Springs, New York, U.S.

1886 Leigh, Mr J. Dickinson, The Infirmary, Ripon.
1886 Leslie, Dr G., Old Manse, Falkirk.
1883 Lindsay, Dr D., Montreal House, Bothwell Road, Hamilton.
1863 Linton, Dr John, 60 George Square.
1871 Lucas, Dr Robert, Dalkeith.

1884 Macdonald, Dr W. Fraser, Auchtermuchty.
1879 Mackay, Dr George, 2A Gilmore Pl.
1884 Mackay, Dr G. Hugh, Elgin.
1873 M'Nab, Dr John, Obbe, Harris, Stornoway.
1879 M'Neil, Dr William, Stranraer.
1878 MacRaild, Dr Donald, Greenock.
1881 Macvie, Dr S., Chirnside.
1879 Macwatt, Dr John, Duns.
1885 Macwatt, Dr R. Charles, Haymount, Duns.
1879 Marshall, Dr Thomas, 55 Fortess Road, London, N.W.
1884 Marshall, Mr William, Milnathort.
1885 Matthew, Mr Alex., Corstorphine.
1877 Menzies, Dr David, 21 Rutland Sq.
1847 Menzies, Dr William, 115 Lothian Road.
1866 Messer, Dr Fordyce, Helensburgh.
1885 Michael, Dr Gustave, Craiglockhart Poorhouse.
1884 Millard, Dr W. W.. 3 George Place.
1879 Miller, Dr Hugh, 298 Bath Street, Glasgow, W.
1877 Miller, Dr J. Bell, Lechlade, Gloucestershire.
1883 Mills, Dr B. Langley, The Castle.

1885 Mills, Dr James, Janesville, Wisconsin, U.S.A.
1876 Moir, Mr Alexander, 30 Buccleuch Place.
1840 Moir, Dr John, 52 Castle Street.
1866 Moir, Dr Robert, 48 George Square.
1880 More, Dr Jas., Rothwell, Kettering. Northampton.
1884 Mowat, Dr John, 1 Hope Park Terrace.
1877 Murphy, Dr James, Holly House, Sunderland.
1862 Murray, Dr David, 2 Merchiston Bank Terrace.
1878 Murray, Dr D. R., 41 Albany Street, Leith.
1879 Murray, Dr James, 12 Claremont Place.
1880 Murray, Dr R. Milne, 10 Hope St.

1878 Napier, Dr A. D. L., Dunbar.
1885 Nesham, Dr T. Cargill, 12 Ellison Place, Newcastle-on-Tyne.
1884 Neve, Dr E. F., Cowgate Dispensary.
1886 Nisbet, Dr W. B., Helmsley, York.

1879 Oakes, Dr Arthur, Merimbula, 99 Priory Road, West Hampstead, London, N.W.
1885 Oliphant, Dr E. H. Lawrence, 8 Melrose Street, Glasgow.

1883 Pairman, Mr T. Wyld.
1882 Paterson, Dr G. Keppie, 2 Elm Row.
1840 Peddie, Dr Alexander, 15 Rutland Street.
1882 Peddie, Dr H. Anderson, 2 Palmerston Place.
1873 Playfair, Dr John, 25 Rutland St.
1875 Porteous, Dr, Pathhead House, Kirkcaldy.
1886 Pringle, Dr J. Hogarth, 5 Livingstone Place.
1884 Proudfoot, Dr Thomas, 4 Bernard Terrace.
1885 Puckle, Dr S. Hale, 32 Morningside Road.

1881 Ranking, Dr J. E., Tunbridge Wells.
1869 Rattray, Dr A. M. T., Portobello.
1880 Reid, Dr W. L., 7 Royal Crescent, Glasgow, W.
1880 Reid, Dr W. Spence, Oakley, Kirkcudbright.
1882 Rendell, Dr Herbert R., care of Messrs West & Rendell, St John's, Newfoundland.
1884 Richardson, Mr Wm., Bath Lodge, Reading.
1883 Ritchie, Dr D. W. L., 45 East Claremont Street.

1880 Ritchie, Dr James, 14 Charlotte Square.
1861 Ritchie, Dr R. Peel, 1 Melville Crescent.
1881 Robertson, Dr J., 104 Lauriston Place.
1870 Robertson, Dr W. B., St Anne's, Thurlow Park Road, West Dulwich, London, S.E.
1877 Ronaldson, Dr T. R., 18 Bruntsfield Place.
1867 Rosa, Dr George, 17 Gayfield Sq.
1879 Rowland, Dr L. Lindsay, Salem, Oregon, U.S.A.
1880 Russell, Dr Henry, Quebec.

1885 Saunders, Mr F. A., Denburn, Crail.
1880 Scott, Dr T. R., Musselburgh.
1886 Sherburn, Dr J., 5 Albion Street, Hull.
1884 Simmons, Dr Fourness H., 41 Catherine Street, Liverpool.
1858 Simpson, Prof. Alexander R., 52 Queen Street.
1882 Simpson, Mr James, Eastwood, Ferry Road.
1873 Sinclair, Dr Alexander J., 21 Northumberland Street.
1882 Smart, Dr David, Toxteth Workhouse, Smithdown Road, Liverpool.
1870 Smith, Mr D., Spearmill, Marykirk, Montrose.
1885 Smith, Dr John, Mauchline, Ayrshire.
1881 Somerville, Dr Robert, Galashiels.
1867 Spalding, Dr William, Gorebridge.
1878 Spence, Dr R., Burntisland.
1884 Spence, Dr William, Dollar.
1884 Stewart, Mr J. S., 16 Merchiston Terrace.
1885 Stewart, Dr R., 19 Buccleuch Place.
1879 Stewart, Dr W., Kirkwall.
1866 Stirling, Mr Stewart, 6 Clifton Terrace.
1851 Struthers, Dr James, 39 Charlotte Street, Leith.
1885 Sym, Dr A. C., 144 Morningside Road.

1868 Taylor, Dr William, 12 Melville Street.
1877 Thatcher, Mr C. H., 13 Albany Street.
1884 Thom, Jr., Dr Alexander, Crieff.
1877 Thomson, Mr A. D. R., Musselburgh.
1881 Thomson, Dr James, David Place, St Heliers, Jersey.
1877 Thomson, Mr J. Stitt, Dalkeith.
1869 Turnbull, Dr M., Coldstream.

1872 Underhill, Dr C. E., 8 Coates Crescent.

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1885 Underhill, Dr Fred. T., Princes End, Tipton Green, Staffordshire.

1879 Underhill, Dr T. Edgar, Tipton Green, Staffordshire.

1886 Walker, Dr A. Wallace, 17 Forth St.

1879 Wallace, Dr Abraham, 4 Newton Place, Glasgow

1865 Watson, Dr W., Mid-Calder.

1879 Watt, Dr J. Douglas (Hospital for the Insane), Gladesville, Sydney, New South Wales.

1881 Waugh, Dr John, 36 Finsbury Pavement, London, E.C.

1881 Webster, Dr A. D., 20 Newington Road.

1882 Weight, Dr R. Hill, 2 Copthall Buildings, London, E.C.

1840 Weir, Dr T. Graham, 36 Heriot Row.

1879 Weir, Dr Walter, Gatestone, Upper Norwood, London, S.E.

1867 Will, Dr Ogilvie, 305 Union Street, Aberdeen.

1845 Wilson, Dr David, 12 Dean Terrace.

1879 Wilson, Dr T. D., 10 Newington Road.

1880 Wood, Dr Russell, 9 Darnaway Street.

1879 Wylie, Dr Hamilton, 1 George Place.

1861 Young, Dr James, 14 Ainslie Place.

1859 Young, Dr Peter, 43 Heriot Row.

1871 Young, Dr Peter A., 25 Manor Place.

1850 Ziegler, Dr William, 47 George Square.

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TRANSACTIONS

EDINBURGH OBSTETRICAL SOCIETY,

FOR SESSION XLVII., 1885–86.

MEETING I.—NOVEMBER 11, 1885.

Dr J. CONNEL, *President, in the Chair.*

I. *Dr Foulis* exhibited a new form of CATHETER for washing out the bladder.

II. *Dr Leith Napier* showed (1) a CANCEROUS OVARY, removed by laparotomy sometime previously; (2) a PLACENTA, with velamentous insertion of the cord.

III. *Professor Simpson* showed the UTERUS and APPENDAGES OF A CORD. The specimen showed distinct evidence of ovaritis, giving rise to inflammatory adhesions to the surrounding organs.

IV. *Dr Alexander Sinclair* showed the OVARIES and TUBES from a Tait's operation which he had recently performed. The patient was the subject of hystero-epilepsy and of profuse menorrhagia, both of which had disappeared since the operation.

V. The retiring President, Dr Connel, gave his

VALEDICTORY ADDRESS.

GENTLEMEN,—In resigning to my successor a chair which, surely, has never been so unworthily filled, I have a solid satisfaction from two considerations, viz.,—(1), that never in any biennial period of its history has our Society been less in need of a directing head; and (2), that our transactions during the past two years

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will compare favourably in enduring profit with those of any similar period from its foundation.

I do not intend to repeat what was so well done by my learned predecessor, viz., to give a detailed *résumé* of the work of these two past sessions.   It would be presumptuous in me to express an opinion on all the subjects that have been under discussion, and members might reasonably complain that their own contributions had not been assigned that prominence to which, in view of a perfectly qualified and authoritative judgment, they would be entitled.   I can truly say that at what meetings I have myself attended I have never found the interest flagging, nor have I failed to carry away from any of them some useful hint or addition to my previous knowledge; while I am well and regretfully aware that on the many occasions of my absence, I have missed much which cannot be obtained in a mere perusal of the *Transactions*.

It is a continual source of pride and satisfaction to us, that we have men of so many and so varied accomplishments, whose energies are ever active and serviceable in our department of medical study and practice.   The office of President has insensibly become more and more that of the *roi fainéant*.   Inquisitive enthusiasm is in the atmosphere, and needs no stimulus from any more gifted personality, such as James Simpson's must have been when, forty years ago, our Society was in its infancy.   How many now run to and fro, and how is knowledge increased !   If it is true of our people in general, it is pre-eminently true of our profession, that the average level is assuredly rising; and though cavillers are not wanting, even among ourselves, I believe that we exhibit as little of the learned ignorance occasionally displayed by members of scientific associations as it is possible to have in a mixed assemblage of men.   In other words, it is a working Society, seeking benefit and finding it from the study of its own speciality.

We have had much discussion in some quarters as to the advantages of specialism in our professional work.   I imagine that every one who has thought at all upon the subject must have come to the conclusion, that as time and knowledge advance our ranks must become more and more differentiated into the General Practitioners and the Specialists.   The public will have it so, and very naturally.   As Lord Derby told the Manchester students, we have got to be specialists if we mean to do anything in these days. The time for the all-round consultant has gone by for the present, and will not recur till ideas which are now obtained by mental effort have become intuitive in the race, and energy is liberated for new acquisitions.   That there is *no* royal road to learning is not entirely true.   Let any one (if he can) hark back three hundred years, and, entering into the labours of those founders of our science for whom the then unknown was truly trackless, try to unravel those unconscious cerebrations which are the truisms and

trivialities of our daily life, and will he deny that by highways of quickened apprehension and enlarged capacity he has reached eminences that were then undreamt of? Why should the process stop? Just as a great genius in any line, or at any period, is the result of unseen but favouring " streams of tendency," so continued and conscious training towards any end may be expected to—nay, must—have its natural outcome in some specialized instinct. We have all known or heard of men who may be said to " absorb " ideas,—to take them in without effort, and, as it were, through the skin. It would be going too far to speculate on what the long result of time may in this way yield us ; but if it is not " les choses mais la recherche des choses" that the human mind desires, we may congratulate ourselves that labour and research will still be necessary during our time.

I take it that one chief use of our Society is what we may designate " atmospheric." No one who has not worked in isolation can rightly appreciate the fostering power of fellowship and community of sentiment. The dynamic force of an idea that has become the common property of sympathetic minds exceeds in far more than cubical ratio that of the same germ of thought lying in one solitary bosom, and I trust that no lapse of years will ever bring specialists to a condition of individualism in their pursuits. I suppose this need not be feared so long as men are subject to the ordinary human motives ; but it is not amiss to remind ourselves of the evolutionary possibilities that lie in *social* as distinguished from *individual* effort, and to resolve anew that our corporate vitality shall not fall below any former level.

We must set before us, then, in our discussions, the interests alike of the specialist and of the general practitioner; and in determining the practical value of any biennial period we shall ask, How have these interests been consulted ? I have heard it made a charge against the Society that our communications and debates have not now the same conversational character as in its earlier years. The statement may be true, but I do not think it is a fair ground of complaint. It should be the aim of every member to deserve the encomium of the poet, " His worst he kept, his best he gave," and so to maintain that high courtesy which is the mark of intellectual aristocracy. Nor need this at any time preclude, in the absence of more serious matter, an occasional descent into more familiar conversation. A great statesman of fifty years ago used to say of himself, that " he went to unbend his mind in the House of Commons." With something of this feeling ought we to come here, not forgetting the great influence that is committed to us, but prepared for an enjoyment which we cannot get in the care and burden of the day.

It is, as I have said, a solid satisfaction to recall work that has been of real advantage to both classes of our Fellows. To begin at the foundation of our practice, I presume that I have only to

name the physiological researches of Dr Milne Murray in order
to insure a hearty recognition of his merit in that line. The
anatomical work of Dr Berry Hart must also take a permanent
place in the literature of gynecology. Akin to it are those
observations on the placenta and membranes by Dr Barbour, which
must modify in some degree the notions of the thoughtful practi-
tioner, and "give him pause" ere he too hastily interferes with
the natural process of detachment. Nor can we forgot the careful
synopsis of cases of craniotomy by Surgeon-Major Arnott, bringing
out strongly the advantages of Professor Simpson's basilyst-tractor,
which seems to be as near perfection for its purpose as can be
conceived, and is no doubt destined in the future to rescue
maternal lives that would have succumbed to more complex
manipulations. The mention of obstetric instruments suggests
the traction-forceps, which, from the point of view of the general
practitioner, I cannot help thinking is a better adaptation to
practical wants when embodying in some form the idea of de-
tachable traction-rods. This is, of course, a matter of opinion ;
but I presume I express the sense of the Society when I say that
among those who have used the instrument its superiority is for
ever settled. Nor could I omit mention of Dr Macdonald's
elaborate paper upon Missed Labour, which was noted at the time
as marking a distinct advance alike in our knowledge and our
practice. I do not mention any other of his numerous contri-
butions, but I am sure he will not think too lightly of the credit
reflected on the Society by Mr Lawson Tait's commendation,
remembering in language which I need not translate to him,

Οὗτος μὲν πανάριστος ὃς αυτω παντα νοηση
Ἐσθλος δάν κακεινος ὃς ἐν ἐιποντι πιθησῃ.

Another noteworthy discussion was that of Dr Carmichael's paper
on Infant Feeding, followed by Dr James Ritchie's interesting
demonstrations of the effect of various diluents on the curd of
milk. My own experience is that the feeding of infants is con-
ducted very much by rule of thumb, and every practitioner must
be grateful for the distinct ideas gained through these experiments.
The healthy nutrition of the growing and undeveloped child is a
subject of much practical importance, and I think we can trace
in the families of our patients where common sense, or the want
of it, has prevailed in the substance and regulation of the
children's diet.

But if the saving of life be one of our highest functions—albeit
"there are worse evils than pain, and greater calamities than
death"—there is a subject which concerns general practitioners
and specialists alike, and to which the attention of the oldest as
well as the youngest obstetrician cannot be too carefully or too
constantly directed, viz., the necessity of continuous, rigid, con-
scientious, ceremonial *cleanliness*. And here I must again name

Dr Barbour for his truly admirable work. The thanks of the Society were due also, and were given, to Dr Vassily Sutugin for his exhaustive paper upon the Prevention of Lying-in Fever ; and if no discussion took place upon it, the reason was that no man could now be found to dispute his position. Let us take all care, however, lest our belief in antiseptics becomes, like the Christian creed, an opinion rather than a working faith. No proposition can be more important to the obstetrician than this, that " septic germs are not killed by time but by strict disinfection," and this general statement, taken along with the observation (after careful experiment) of Forster of Amsterdam, that " the only solution which served without fail to rid the fingers of micro-organisms was the 1 per 1000 solution of corrosive sublimate," puts the matter so plainly, and involves so little trouble, that any man who carelessly forgets that he may be carrying death under his finger-nail, or fails to safeguard his patient against it, must surely, in the event of a preventible catastrophe, deserve to be held in the highest degree culpable.

In all these points, then, we may look with satisfaction on additions to the sum of knowledge. But, gentlemen, will it be amiss if I add again a word in encouragement of the *moral*, as well as the *mental*, *nisus* which should ever distinguish our profession ? Let us beware lest in the very enjoyment of our intellectual affluence we fall into what " douce Davie Deans " would have called the " right hand extreme " of professional idolatry. Accurate knowledge, technical skill, evident results and successes, these are the idols of the profession, and it is well just once in a while to put plainly before ourselves that we are men and citizens as well as gynecologists and obstetricians, and that, though all these are objects of first importance, they are so only in subserving their loftiest uses, alike to the community or the individual, of preparing for, and leading up to, still higher developments. I was much pleased a few weeks ago to come on the following sentence in a journalistic leading article :—" The practitioner of the future will be no specialist. He will not even be a specialist in medicine ; much less will he be a specialist in surgery, or any branch of medicine or surgery. He will be a *general* practitioner of the art of healing,—a scientist who so prosecutes his studies of the physico-mental or physico-physical organism of man that, with an intelligent knowledge of nature's laws of health in relation to the genus *homo*, he is able to bring general principles to bear for the relief of suffering and the rectification of disorder in function and structure." This expresses my own belief, but, as I indicated before, much, very much, remains to be done by individuals and by societies before this consummation can be reached. A vast deal of trained faculty has yet to be rendered automatic before it can reappear in unconscious cerebration of this degree of development.

We have lately seen a book issue from the press, in which the thesis appears to be contended for that the human being will ultimately become hermaphrodite, or rather, perhaps, a-sexual. I cannot pretend that I fully understand the arguments by which this proposition is supposed to be proved, but there is nothing in physiology to warrant us in declaring it impossible. Be that as it may, the philosophy of the reproductive organs is a subject which we may claim in great part as our own, and I cannot but think that we shall at some future time find room in our debates for some of those moral questions which are so closely interwoven with our physiology. How the growing youth of either sex is to be safely introduced to that new world of passion whose temptation every parent knows; is it to be by the father, the mother, or the teacher, or is it to be by chance? On the true answer to this question hangs a universe of possibility for coming generations. Can we give no help in answering it? There are two terms from an old authority which must be brought out in strong relief—"Sanctification and Honour,"—and, unless we singly and collectively stand an acknowledged priesthood of social purity, I fear there is nothing to be hoped for beyond the futile remedy of the Criminal Law Amendment Act. Far be it from me to frown upon innocent jesting,—nay, I believe that the most playful humour generally indicates the deepest thought,—but let us beware of ever forgetting that our science is but the handmaid of the higher law; that inscrutable as seems the *vinculum* between the best and the worst in our common nature, in that very union lies the key to some of the sternest discipline of our race; and that in the elucidation and fulfilment of those eternal purposes which

> " By ordered impulse stream
> From the great heart of God,"

our special study is calculated, and I believe is destined, to play the most considerable part. The universe is but an ordered unity, and the clearness with which we perceive that truth is the exact measure of our political and moral advancement.

I am led to these remarks by the perusal of a recent magazine article in which the following passage occurs:—" What can be more obvious than that sexual love is indispensable for the complete and perfect happiness of the normal and healthy individual? And what can be more obvious than that for the individual to create parental responsibilities which he is either unwilling or unable to fulfil, is to inflict misery both upon his offspring and himself, and unjustly to burden his already overburdened fellow-creatures?" And again:—" If the term philosophy is held to cover the whole field of scientific attainment, and to include the sum of the fruits of all purely rational intellectual effort, surely none of these fruits can be opposed to any aspect of

science, or that which includes them all; and if in their ultimate results they can be proved to diverge from the teachings and tenets of modern morality, so much the worse for the immediate and remote prospects of the huge fraud of supernaturalism upon which that modern morality is founded."

Gentlemen, I would never assert that because an opinion is dangerous it is therefore untrue or undeserving of investigation. The unsettlement induced by it may be only preliminary to a firmer and more enlightened belief; but it seems to me that if we accept the above teaching we proclaim, almost in so many words, that woman is a mere instrument for the gratification of appetite. Is it so?   Then if we are to diverge henceforth from the teachings and tenets of modern morality, how very sure we ought to be of our science!   Every honest man will be moved to fix more deeply and more securely those truths of female physiology and pathology upon which so much will depend for the future.   What is the chief end of woman?   That is the question to which an answer will more and more definitely be demanded of us, and it behoves us to secure and arrange every detail of our science with such exactitude that we may give all the help that can be given from our side towards its solution.   Does any one say that we need not regard these questions?   Our department of human activity concerns the physical basis of society itself, and amid political and social changes which bring home to the public mind every day more convincingly that God hath made of one blood all the nations of the earth, we who are behind the scenes, and whom science has long ago assured of that truth, may well hold ourselves responsible for the right or wrong direction of yet undetermined streams of tendency.

These general remarks must be left to fructify in each man's mind.   I cannot think that I misuse your time in emphasizing my own faith in moral evolution, and in the great share which our special work has in the slow but certain process.   If I offered you, curious and accurate investigators, scientific speculations such as prevailed before Bacon's time, you might well dismiss me as an anachronism.   But ere retiring again into obscurity, I am not ashamed that my last word should be to hail that new "instauratio magna" which is destined to put the enemies of moral, as the older long ago put the enemies of intellectual, truth to confusion.

On the motion of Professor Simpson, seconded by Dr Leith Napier, a cordial vote of thanks was awarded to Dr Connel for his address.

Dr HALLIDAY CROOM, *President, in the Chair.*

I. *The President* showed—1. A FIBROID TUMOUR, removed at the end of the third stage of labour. The patient had been under his care during the previous summer, suffering from profuse menor-rhagia. All attempts to dilate the internal os by means of sponge tents, etc., had failed, further than merely to enable a small fibroid to be felt attached to the uterine wall, apparently about the middle of the cavity. The patient was sent home, and returned the previous week, giving evidence of being at the fourth or fifth month of pregnancy. Labour pains commenced on Sunday, the 6th inst., and the patient was delivered of a four months' fœtus in the evening. After removal of the placenta the hand was introduced, and the fibroid twisted off by means of volsella. 2. An OVARIAN TUMOUR, removed that morning. The tumour was adherent in all directions from recent and acute peritonitis. There was considerable ascites. The tumour was multilocular and semisolid.

II. *Dr Angus Macdonald* showed—1. A DERMOID TUMOUR which he wished to draw attention to on account of (1) its large size, (2) the *thinness* of its walls. 2. The OVARIES removed from a case of bleeding fibroid. The position of the uterus and fibroid rendered their removal impossible, and the ovaries were accord-ingly taken out. The right one was large and cystic, and was almost like a spleen when removed. Had it not been taken away, the patient would thus have had an ovarian tumour complicating her other ailment.

III. *Dr Milne Murray* showed a series of TRACINGS obtained from the uterine muscle of the rabbit, illustrating the effect of the application of water of different temperatures on that tissue. The apparatus for recording the action was described at a previous meeting. The results obtained were briefly summarized as follows:—1. The normal unimpregnated uterus of rabbits is the subject of rhythmic contraction (1 contraction in about 120 seconds). 2. Water at 105° F. to 115° F. applied directly to the uterus causes an immediate and prolonged tetanus, lasting for a varying period of from five to thirty or more minutes. 3. This is accompanied by a simultaneous contraction of small bloodvessels, and consequent blanching of the tissue. This vasomotor tension yields before the muscular spasm, but does so quite gradually, and is not followed by reactionary dilation. 4. The application of water at 32° F. to 42° F., after a latent period of 30 to 70 seconds, is followed by a slowly developing tetanus, which continues for a much shorter period than that produced by warm water, and is

relatively less intense. 5. The bloodvessels contract, and blanching occurs, but is almost immediately followed by violent reactionary congestion, the organ frequently becoming bright scarlet. 6. The tetanus can be reproduced frequently and immediately by the application of hot water, but can only be reproduced after a distinct interval by the application of cold water. 7. No such tetanus as that described can be produced in the uterus of the rabbit by the faradic current, however strong. Any contractions produced by this agent are slight compared with that produced by either hot or cold water, and invariably cease with the application of the stimulus. These observations will form the subject of a more extended communication at an early meeting of the Society.

IV. *Dr Church* showed a SIMPLE MEANS OF WASHING OUT THE BLADDER, by means of a glass funnel attached to an ordinary catheter by means of a long flexible tube.

V. *Dr Freeland Barbour* introduced a discussion on MICRO-ORGANISMS IN RELATION TO PUERPERAL FEVER, WITH SPECIAL REFERENCE TO ANTISEPTICS. Of the many aspects of puerperal fever which might call for consideration, we propose in this discussion to take up one which has only in recent years begun to attract attention, and which has not as yet been discussed by this Society, viz.,—*Puerperal Septicæmia in relation to Micro-organisms.* For reasons which will be immediately evident we cannot discuss this question without considering the cognate one of *Antiseptics ;* and it is hoped that by combining the Scientific and Practical aspects of this question, we shall promote a good debate.

Before looking at these two aspects, we must define the subject and purpose of this discussion. The term Puerperal Septicæmia is given in the title to exclude the consideration of other fevers complicating the puerperium and often included under the broader name of Puerperal Fever. With regard to micro-organisms, we do not propose to enter into the wider question of the validity or non-validity of the germ theory in itself:—Whether micro-organisms be the cause or the result of the morbid processes with which they are associated ; and if they are the cause, how it is that they operate ? Our purpose is to show that the evidence goes to prove that *Puerperal Fever stands in the same relation to the Germ Theory as other forms of septic infection do.*

The evidence for this is derived from two sources : — (*a.*) Scientific investigation ; (*b.*) The use, in practice, of Antiseptics. We shall glance briefly at these two points, and then draw some conclusions.

(*a.*) SCIENTIFIC INVESTIGATION.—Looking at the subject from this point of view, we note the following facts. The discovery by

Pasteur in 1857 of the lactic-acid ferment led to the investigation of the relation of micro-organisms not only to various forms of fermentation, but also to infectious diseases. In 1869, puerperal fever was investigated by Coze and Feltz, and by Mayerhofer, all of whom found micro-organisms present in the blood and in pus from serous cavities. During the last fifteen years various investigators have worked at puerperal fever in relation to micro-organisms, the most important contributors to our knowledge being Pasteur himself, Doléris, Chauveau, Fraenkel, and Lomer. In the course of these investigations various forms of micro-organism have been described in connexion with puerperal septicæmia :—(1.) A monococcus, consisting of isolated points ; (2.) A diplococcus, in which the points appear always in pairs ; and (3.) Chain-like micrococci, in which the points appear in chains of several members ; (4.) Of the chain-like form, Doléris believes he has found a variety distinguished by the larger size of the points of the chain ; (5.) Rod-shaped bacteria have also been described. The chain-like form is the one which has been found in the largest number of cases. Last July, in a paper which I read to the Society on the Pathology of the Post-partum Uterus, I described a case in which I had found the chain-like form in several of the organs after death. In that case the blood was not examined during life.

But the *discovery of micro-organisms in the tissues after death is* only the first of the four steps in the process of demonstrating the relation of a micro-organism to a given disease. Koch has formulated these as follows :—(1.) The micro-organism must be found in all cases of the disease, and in that disease only ; (2.) It must be isolated and cultivated, and yet preserve its characteristics through a series of cultivations ; (3.) Inoculation with a pure cultivation must produce in the inoculated animal the symptoms of the disease ; (4.) The micro-organism must be found in the tissues of the inoculated animal, and in the same relation to them as in the original disease.

It is evident that during life, *cultivations* can only be made from the lochia or the blood, unless in exceptional cases, such as Lomer's case of pemphigus vesicles. Results obtained from the lochia carry little weight, owing to the impossibility of excluding germ-laden air. Cultivation of the blood gives in a large proportion of cases negative results. In a case which came under my notice recently I obtained blood[1] on four successive days previous to death. Cultivation in meat jelly gave negative

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[1] In doing this, the skin must be first thoroughly cleansed with an antiseptic, and the surface pricked with an aseptic needle. The blood is collected in an ordinary vaccination tube, which has been sterilized by heating it in the flame. One end is sealed and the tube moderately heated ; when the open end is dipped in the drop of blood the blood of course runs up the partially exhausted tube, the open end of which is then sealed.

results. Doléris accounts for this fact by stating that it is a law regulating the development of these organisms that they must be in a condition of rest; they never multiply in the circulating blood, are perhaps destroyed by it. If this be true, whatever tends to a coagulation of the blood will produce a condition favouring their multiplication.

Cultivations have been made in a large number of cases from the tissues and fluids after death. These have generally given the chain-like micrococcus. Pure cultivations of it have been obtained for several generations; and it has been shown that the media of cultivation influence the activity of the virus. Results from the *experimental inoculation* of animals are still inconclusive— some animals, *e.g.* guinea-pigs, being proof against it. Chauveau and Fraenkel have, however, both succeeded in artificially producing septicæmia, sometimes acute and sometimes of a chronic type.

In this brief sketch we have merely indicated the facts obtained from scientific investigation. Space prevents our considering them more fully. A careful examination of them will return a verdict of 'not proven from insufficient evidence' as far as concerns the etiological relationship of micro-organisms and puerperal fever. Still, the evidence points towards our yet obtaining a proof such as we have in the case of splenic fever.

(*b.*) RESULTS OBTAINED IN PRACTICE FROM THE USE OF ANTISEPTICS. — It seems to me that the germ theory receives remarkable support from the fact that *those substances which have been shown to be most effective in destroying micro-organisms outside of the body have proved to be most useful in treating septicæmia.* There is no obstetrician who does not wilfully shut his eyes to the evidence but now believes that the washing out of the uterus with antiseptics is followed by the most beneficial results. Even with regard to the respective value of different antiseptics, it is interesting to note that Tarnier had satisfied himself clinically of the superiority of corrosive sublimate over carbolic acid before Koch had demonstrated it experimentally. Koch's scientific evidence in favour of corrosive sublimate is so strong that we believe it will replace carbolic acid in obstetric practice. He found that the spores of anthrax bacillus would still grow after immersion for seven days in a 2 per cent. solution of carbolic acid, as also they did after immersion for a day in a 5 per cent. (1–20) solution. But after immersion in a solution of 1–10,000 of corrosive sublimate for from 5 to 60 minutes the same spores became sterile; in fact, immersion for ten minutes even in solutions up to 1–20,000 sterilized the spores. He places the limit of the action of the sublimate on the spores of anthrax bacillus as lying somewhere between a 1–20,000 and a 1–50,000 solution. His experiments on mice were very interesting. Three

spore-laden threads were dipped for ten minutes in solutions of 1–10,000, 1–20,000, 1–50,000 respectively, and then introduced beneath the skin of different mice. The 1–50,000 mouse died next day, as rapidly as if the spores had been fresh. The 1–20,000 one died on the fourth, the 1–10,000 on the fifth day. These last showed, therefore, an extraordinary prolongation of the period of incubation, which may fairly be attributed to the action of the sublimate. The same experiment was repeated, with the difference that the spores lay for one hour instead of ten minutes in the solutions. The 1–50,000 mouse died in forty hours, the 1–20,000 mouse died in three and a half days; the 1–10,000 mouse survived. *"Sublimate is therefore the only one of all recognised antiseptics which possesses the very important peculiarity, that it kills by a single application of a comparatively weak (1–1000) solution for a few minutes all, even the most resistant, spores of micro-organisms;* even with a solution of 1–5000 a single dipping was sufficient."

The fact that it admits of being used in such weak solutions makes it a much more portable article than carbolic acid, a point of some importance to the obstetrician. He can carry a large quantity of it in a concentrated form. Here I show you a convenient solution which Dr Hart got Messrs Duncan & Flockhart to prepare. The solution is of such a strength that one drachm (measured by this glass cup attached to the stopper) added to a quart of water gives a solution of 1 in 2000.

So much for the evidence derived from the use of antiseptics.

In concluding this contribution to our discussion, I would draw the attention of those who accept the germ theory to some points in the development of micro-organisms which I think throw light on some facts which we observe in obstetric practice.

1. The growth and activity of micro-organisms is dependent on the media in which they are cultivated—'media' including soil and other conditions, such as presence or absence of oxygen. This is seen both in the results of artificial cultivation and of experimental inoculation. Arloing's investigations bring out the effect of change of media in a very striking way. He found that when the micro-organisms were transferred to fluid prepared from chicken they lost their activity, but regained it when they were retransferred to beef bouillon; and that, while inoculation with the most virulent form caused poisoning without suppuration, inoculation with the attenuated form (that prepared from chicken bouillon) produced slow changes ending in abscess formation. The discrepant results of inoculating animals with pure cultivations may be due to the fact that the change of media necessary to obtain a pure cultivation has altered the properties of the microbe. Further, there remains the curious and interesting fact that the tissues of certain animals will not allow certain micro-

organisms to flourish in them: Chauveau and Fraenkel found the guinea-pig to be proof against inoculation with the virus of puerperal septicæmia.

These scientific facts give us a basis for this proposition that— *The condition of a patient has a leading rôle in the development of septic poisoning: the nearer the patient's health approaches the normal standard the less is the need of antiseptics.* This is a trite fact in regard to the development of morbid processes generally; but its significance in the case of septic infection has not been sufficiently insisted on. The more nearly the patient's condition approaches that of normal health the greater is the germ resisting power of the tissues, or, in more scientific phraseology, the less favourable are the media which they afford for the growth of microbes. In gynecological operations, especially where the patient's general health is approximately normal (where it has not been seriously affected by the local condition calling for operative treatment), cold water is all very well; but the puerperal patient is so much below par that we cannot trust to cold water or Condy's fluid, but must use the most reliable antiseptic.

2. Micro - organisms require the condition of rest for their development; they will not multiply in the circulating blood. Doléris calls attention to this fact as explaining why, in cases recorded by himself, Pasteur, and others, micro-organisms were not obtained from cultivation of the blood during life, but were readily prepared from cultivations of the blood and other fluids post-mortem; and were likewise found in the tissues, so as to leave no doubt of their having been present before death.

We are not yet in a position to say whether in cases of puerperal septicæmia we have to do with *septic infection* alone, or whether *septic intoxication* may not also occur. In the majority of cases which have ended fatally, and in which the organs have been examined, micro-organisms have been found—pointing towards the existence of a virus which multiplies in the body, like that of a specific fever. That this virus is *specific* there is no proof. Lomer points out that similar chain-like micrococci have been described in scarlet fever, erysipelas, and pyæmia. The fact that they do not multiply in the circulating blood explains, I think, why the washing out of the uterus is followed by such good results; for one's first doubt naturally is how the washing out of the uterus can prove beneficial, if rapidly-multiplying microbes, producing symptoms of septicæmia, have already passed into the system. The answer to this question is, I think, *that in these cases the toxic material does not multiply in the blood, but is generated in the uterus alone*, from which it is served out into the system, and eliminated by the excretory organs. The relation might be illustrated from the gas supply of a city; in which the gas is, of course, produced in the retorts at the central work, and is simply served through the pipes and eliminated at the burners.

By washing out the uterus we put out the retorts and stop further production; and, in a healthy constitution, the elimination of the poison is only a question of time.

There are, of course, cases in which the local process has gone beyond the uterus, *e.g.*, where we have septic thrombosis in the veins of the broad ligament; in this case the production of toxic material may not be limited to the uterine cavity, and therefore the washing out of the uterus will not cut off all the supply of the poison. Or again, we may have the micrococci multiplying in the *lymphatic system* or in the *Fallopian tubes.* In these cases, also, washing out the uterus will do no good.

3. The microbes described in septicæmia differ from those characteristic of putrefaction. In the great majority of cases of puerperal septicæmia, the micro-organism found has been the chain-like micrococcus; the rod-shaped bacteria, common in putrefying matter, has rarely been found in the blood and tissues of the body, although it is not uncommon in the lochia. May we not draw this practical inference, that we may have in the uterus septic matter which is not putrid, and therefore showing no fœtor; and formulate the proposition that while *all putrefaction within the uterus after delivery may cause septic poisoning, not all septic poisoning implies putrefaction ?* We merely throw out this possible explanation of those cases in which we have septicæmia without fœtid lochia, and ask whether we are not bound in those cases also to give the patient the chance of washing out the uterus.

Professor Simpson said: No subject can occupy more profitably the time of the Society than a consideration of the genesis of septicæmia, and I am glad to see Dr Hare here, who will be able to give us further information on the scientific side of the question. I should like to ask Dr Hare to give his opinion as to the following points—Whether we are to look for the cause of septicæmia as being always a specific germ which had to be somehow introduced into the mother's genitals, or whether we are now to admit that other poisons, such as that of diphtheria, erysipelas, etc., if introduced into these passages, may cause a similar condition. Gusserow has, of course, shown that a woman exposed to these poisons may be the subject of attacks quite different from anything we can call septicæmia, but would these poisons, if introduced into the genital canals, give rise to such attacks, or to the more definite symptoms of what we call septicæmia? Such considerations are interesting in relation to such cases as those recorded by Dr Hunter, who had a series of septicæmias after having attended a patient suffering from erysipelas on the hand. Did these cases run a course similar to a typical septicæmia? Again, it is important to determine whether the poison is introduced only by means of fingers, instruments, apparatus, etc., or if the introduction may not sometimes depend on the germ-

laden atmosphere. In the latter case there would be danger whenever a genital wound was exposed; or the microbes might be introduced through the lungs or stomach, and exert their deleterious influence when they came upon the uterine surface or on tissues of lowered vitality. It is well to bear in mind that easy labours are, as a rule, seldom followed by septicæmia; and Winckel has shown that it is exceedingly rare in precipitate labours. This is a point of much interest. Possibly it may be that the suitable media for the cultivation and development of the poison is absent in these cases. We will all agree with Dr Barbour, that we should have early recourse to washing out the uterus in all cases where we find signs of the disease. I agree further with him that corrosive sublimate is the best solution for this purpose. I cannot be deceived at the same time into supposing that the use of this substance is entirely devoid of risk. Thus, in the Maternity Hospital during the present quarter, a patient who showed marked signs of septicæmia improved rapidly under regular uterine douching with corrosive, but on the fourth day had bloody stools, owing undoubtedly to the absorption of the mercury. But we must be content to know this; and we will best avoid it by douching the uterus with plain hot water after the antiseptic has been applied.

Dr Angus Macdonald doubted if he could add much to what had been so well put by Dr Barbour. He admitted that the subject was one of the highest importance. He handed round a drawing of the lochial discharge as seen under the microscope, which had some bearing on auto-infection. He made a series of observations on the condition of the lochia with reference to micro-organisms some time ago. He took great precautions in collecting the fluid so as to prevent the contamination of it by germs floating in the air. The specimens for examination were collected under the spray with every care, and in every case it was found that the cultivations gave an abundance of micrococcus, and that in fluid removed even from the cervix. He was of opinion that the ordinary lochia might itself provide the poison, a view which was held by the old Greek physicians. He certainly agreed with Dr Simpson in thinking erysipelas might give rise to a condition in all respects identical with that of ordinary septicæmia. He recollected a case in which a patient was seized with erysipelas post-partum. The mischief began in the head, and extended downwards over the body. No symptoms of septicæmia whatever were to be found until the disease reached the vulva, when a fatal result occurred with great rapidity, and with all the signs of acute septicæmia. He heartily concurred with the latter part of Dr Barbour's paper—that bearing on the practical questions between micro-organisms and the use of antiseptics. The relation of these organisms to the production of puerperal fever had been clearly established, and, moreover, we could completely destroy them with corrosive sublimate. In this way we could be sure that we were not

carrying them from one patient to another. We might not be able
to abolish the disease entirely, as it was likely sporadic cases would
occur in spite of all precautions, but we could be quite sure of not
infecting our patients. Thus in the Maternity Hospital he (Dr
Macdonald) had attended during four tremestres, and had had no
case of death from this cause, and, indeed, only one death from any
other cause. This result had followed the careful adoption of
antiseptic precautions in this Hospital, and was a condition which
compared with the most favourable of private practice. He quite
agreed with the importance and value of washing out the uterus
with corrosive sublimate solution, but reserved this where real
danger was threatened, as evidenced by the gravity of the con-
stitutional symptoms. In simple cases he merely washed out the
vagina. He was exceedingly pleased with Dr Barbour's paper.
He was convinced that a conscientious man had now the means at his
command of obtaining an assurance of safety against conveying
this disease from patient to patient.

Mr A. W. Hare thanked the Society for the opportunity they
had accorded him of being present at this meeting, and expressed
the great interest with which he had listened to Dr Barbour's
thoughtful and well-weighed address in opening the evening's
discussion. As a surgeon, it was not altogether without precedent
that he should take a deep interest in the subject matter of the
discussion, since the late Sir James Simpson had repeatedly drawn
attention to the close analogy which exists between a recent stump
and the post-partum uterus. In both there is a wound to be
healed, and both are exposed to a series of dangers which, if not
absolutely identical in the two cases, are at least very closely
related. In his paper, Dr Barbour had most carefully restrained
himself from drawing any wider inferences as to the relation of
micro-organisms to puerperal septicæmia than the most rigid
deductive process would allow. This was a very wise precaution
to observe in opening a debate on a question such as the one now
under discussion. At the same time, it was a question whether
from the premises adduced in the case of puerperal septicæmia
one might not take a step further than this, and adopt as a
working hypothesis, in relation to this disease, what was now an
assured basis of discussion in the case of other forms of septi-
cæmia—that a micro-organism is either directly or indirectly the
exciting cause of the condition. In this respect there was no
reason for separating puerperal septicæmia from the varieties of
septicæmia which come under the charge of the surgeon, and in
what followed the speaker would not discuss the fact of that
relation, but the circumstances by which it was conditioned, and
its essential nature in a variety of cases. In considering the con-
dition of the uterus during involution, one was led to inquire why
it should specially offer a nidus for the development of infective
materials. Some light had been thrown on this point by the

researches of Fischel,[1] who finds that apart altogether from the fatty changes which occur in the organ at this period, there is a very large production of peptone amongst the muscular fibres. This peptone formation is only an expression of the rapid reduction and removal of tissue elements in a soluble form, for as the tissues ordinarily are insoluble, and can only increase by taking up soluble material from the nutrient media which percolate through them, so also can they only diminish in bulk by becoming in greater or less degree soluble, which permits of their removal in solution in these same media. Accordingly, we find insoluble myosin breaking down into soluble peptones, which are thrown off in part by the kidneys, giving rise to the peptonuria of the early puerperium,—in part also, in all probability, by the secretion of mammary glands. We have then in the puerperal uterus a soluble material prepared by the exigencies of the physiological condition of involution, and in this material any micro-organisms which gain access to it can multiply the more rapidly from the fact that it is in a soluble condition, and can be immediately applied without further preparation to the requirements of such organisms. In addition to this, the tissues are depressed by recent excessive activity, and are less resistent than usual to infective invasion. One other point which must of necessity be looked to is the possibility of retention of membranes or blood-clots in the uterine cavity. In septicæmia one must recognise two distinct types of pathological action, which have been clearly differentiated by Erichsen. This duality of type has been further accentuated and insisted on by Professor Chiene in his course of lectures at the University. In the one type there is an invasion of living tissues by micro-organisms and their elaborated products. In the other type there is an entrance of elaborated products or ptomäines only, the organisms producing them being confined to dead matter retained in contact with an absorbent surface. The organisms in the former case are pathogenic, and the morbid process they give rise to is a septic *infection*. The organisms in the latter case are saprogenic, and the morbid process they set up is a septic *poisoning*. The former develop in living tissues, the latter exclusively in dead material. Taking up the first type, that of septic infection, one finds comprised under it, as Professor Simpson has suggested, a congeries of different processes. Several facts point to this conclusion. *Firstly*, the infection may be traced to erysipelatoid, scarlatinoid, diphtheritic, or other distinct forms of virus. *Secondly*, the clinical features of these infective conditions point to the same fact, for there are at least three types to be differentiated clinically, viz. :—*a*. Rapid toxic paralysis ; *b*. A specific fever ; *c*. A pyæmic type. In the first of these there is rapid infection with so virulent an agent that death occurs within 24 hours, and the tissue reaction observed *post-mortem* is *nil*, or but a slight trace of splenic con-

[1] *Archiv. für Gynækologie*, Bd. xxiv. 1 and 3.

gestion.   In the second form a specific fever runs its course, selecting either mucous or serous surfaces as its battleground, giving rise respectively to gastro-intestinal inflammations and metastatic affections of the serous cavities, and in these cases there is usually enormous splenic enlargement.   In the third form the disease pursues a much more deliberate course.   Secondary infective foci are formed in various localities by transference of irritative material from the primary focus, and a true pyæmia results.   Etiologically and clinically considered, these cases point strongly to a polymorphism of the infective virus.   *Thirdly,* a similar conclusion is come to in experimental pathology, and this may be said to strengthen the foregoing conclusion by a legitimate use of analogy.   In the house mouse two kinds of septicæmia may be produced artificially—one due to a fine bacillus, this disease being peculiar to this animal only ; another due to a thicker organism, which produces a fatal septicæmia in the rabbit.[1]   In the mouse these diseases are identical from the clinical point of view. Leaving here the type of the septic *infections* with its various sub-divisions, the type of septic *poisoning* must claim consideration. This is due to the group of organisms called saprogenic, which live only upon dead material, and give rise to changes in it, ordinarily described as putrefactive changes.   The dead material is in this case outside the body, external at least to living tissue, but placed in contact with a living surface, through which absorption may occur.   A poisonous product is set free in the decomposing matter, and is absorbed by the neighbouring living tissue, and the condition of septic poisoning, or "sapræmia," is occasioned.   The organism here cannot develop in living tissues,[2] but though it is excluded, its elaborated products obtain access and produce distinct poisoning effects.   These products consist of an alkaloid, "sepsin," first obtained by Bergmann,[3] and of similar bodies described as ptomäines, the pharmacological effects of which are now attracting considerable attention.[4]   In this type of septi-cæmia the symptoms are very definite, and display a tendency to become from time to time exacerbated, each exacerbation corre-sponding to a repetition of the absorption which takes place at the seat of decomposition.   This type offers the greatest amenity for treatment, for by the use of antiseptic solutions the sepsin manufactory may be destroyed, and the poison already absorbed into the system may be rapidly eliminated.   Far otherwise is it in the type of septic infections : when once established, their ejection by therapeutic means seems almost an impossibility, and they must run their course, opposed only by the vital activity of the tissues.   Here prophylaxis is the chief object, by securing as

[1] Koch, *Traumatic Infective Diseases*, New Syd. Soc.
[2] Hiller, *Die Lehre von der Fäulniss*, 1879.
[3] *Das putride Gift und putride Intoxication*, 1866.
[4] Cp. Brieger, *Die Ptomäine*, 1885.

high a vitality as possible in the patient, and by rigorously excluding any chance of infective contamination in operative manipulations. A new sphere is opened in these cases for the activity of pharmacologists, in providing us with specific substances whose action is physiologically antagonistic to that of these infective organisms and the products they elaborate. That such specifics may be found and employed with success is sufficiently indicated by the recent researches of Duclaux,[1] who has found for certain species of organisms antagonistic chemical agents, the minutest trace of which completely stops their vegetative activity. It is along this line that the next great advance must be made.

Dr Peter Young regarded the subject under discussion as one of the highest importance. At one time, before the introduction of antiseptics, this disease was the bugbear of midwifery, and one might say it is so still in spite of all the precautions taken with the means at our disposal. It is interesting to note the change of view that has been taken by obstetricians as to the cause of the condition. He recollects well when Scanzoni regarded with contempt the idea that an endemic poison was the source of the infection, and denied the evidence that any organism outside the mother had anything to do with it. He (Dr Young) admits that the cause is a poison either formed in the patient or introduced by the obstetrician. But he believes, moreover, that we have symptoms of septicæmia produced where there is no solution of continuity. He mentioned the case of a girl of six, who after a meal of sausages had all the symptoms of puerperal fever. There was first well-marked peritonitis. Three days after the local symptoms almost disappeared, but general symptoms ensued, with a high temperature and pulse, etc. These symptoms showed that a certain amount of the poisonous material had entered the blood from the bowel. After running a definite course the symptoms, under purgatives, etc., gradually abated, and the patient recovered. The blood of a puerpera is liable to absorb and provide a suitable nidus for the poison, and her general conditions favour its development. He has always been of opinion that the *materies morbi*, whether *autogenetic* or *heterogenetic*, was not to be looked for in a germ, but in an albuminoid substance produced in the blood in a state of catalysis. This view, whether correct or not, does not alter our practice. It is of importance to keep all infection away from the patient. We are not, however, to regard stinking lochia an indication for washing out the vagina. Our practice of this operation must be determined by constitutional conditions. It is, moreover, of the utmost importance that we attend to the condition of the alimentary canal. We know how fœtid are abscesses which are opened near this canal, and we can only account for such a characteristic by the fact that poisons find their way readily from the canal into such

[1] Recent papers in *Comptes rendus de l'Academie des Sciences.*

abscesses, and give rise to putrefactive changes which are not common in other abscesses. It is thus of importance to attend to the evacuation of the bowel, so as to prevent, as far as possible, infection from this source.

Dr Leith Napier said—We must congratulate Dr Barbour on having brought under the notice of the Society so very important a subject for debate. The subject is one of ever increasing interest, and recent work has but added to our desire for more labour and more knowledge therefrom. Despite our as yet but imperfect knowledge, the existence of micro-organisms in puerperal diseases is not a thing of yesterday; it dates back twenty years. Mayrhofer, in 1865, discovered vibriones in the lochia of sick puerperal women. Rindfleisch, in 1866, described softened metastatic deposits, consisting of vibriones, as existing in the muscular tissues in cases of pyæmia and puerperal fever; beyond the term " vibriones" he mentioned no specific distinction as to the variety of these organisms. Recklinghausen, in 1871, described certain bodies found in the smallest renal veins, in the glomeruli, in the pulmonary alveoli, on post-mortem examination of patients dying from typhus, pyæmia, etc., as *micrococci*. He, with Waldeyer, showed that these existed, in puerperal cases, not only in the lochia, but on the surface of puerperal wounds, in the uterine lymphatics, in the infiltrations of connective tissues, and in exudations in serous cavities. Braidwood and Vacher's papers, published some years ago, showed that healthy lochia contained micro-organisms " free from infection, but capable of producing it." Micrococci occur in many affections, *e.g.*, erysipelas, scarlatina, hospital gangrene, variola, vaccinia, measles, whooping cough, dysentery, endocarditis, osteo-myelitis, acute abscesses, puerperal fevers, and in typhus (according to Mott), and diphtheria. Bacilli occur in typhoid, typhus, pyæmia, diphtheria, etc., etc. Orth states that micrococci are present in the blood in many diseases, particularly in septic diseases, puerperal fevers, diphtheria, etc.; but he expressly states that they are by no means constantly found. Eberth has borne similar testimony. Koch regards the pathogenic bacteria as of distinct species, saying the spherical never pass into rod-shaped forms. On the other hand, Schenk and Ray Lankester affirm that micrococci have been observed to develop into bacilli, and these again into spirillæ. Klein remarks that true micrococci never elongate to form rods, but mentions that certain septic (non-pathogenic) organisms may be changed into pathogenic forms. Pasteur (to whom bacteriology owes so much) holds that the lochia of a puerpera in good condition contain few or no micro-organisms; but should there be a threatening of puerperal disorder, there is abundance of microbes. He, by the examination of the lochia from a patient, predicted an attack of fever before the slightest clinical symptoms were manifest. The form of organisms he describes as the principal, but not the only one, he

has named *Chaplet en grains.* "Puerperal fever," says Pasteur, "has no special microbe, but several forms." Artwing mentions that different forms of puerperal septicæmia are due to one living poison—one micro-organism—but that this has not been proved to be special to the puerperal state. Lormer observes that in puerperal fever, scarlatina, erysipelas, etc., chain-like micrococci are found, which have not as yet been shown to possess individual differences. We must remember also that micro-organisms may exist in disease, as in pneumonia of swine fever, yet have nothing to do with the malady, which according to Klein is due to infection through the air. And again, in many conditions mixed forms are found ; by some these are regarded as accessory bacteria—anyhow, chain-like and rod-like forms are often found in the same individual. According to Professor Ogston, septicæmia (septic infection) is most frequently due to absorption of the ptomaines poured into the blood from some local deposit of micrococci, but more especially in puerperal cases as the result of development of micrococci or bacilli in the blood. Mr Hare and Dr Underhill have referred to what seems to me the most important distinctions possible from a clinical and pathological standpoint, viz.,—the differences between septic poisoning and septic infection. In the former (which I may remark is more common in surgical than obstetrical practice) we have the origin from endo-sepsis ; the condition formerly described as sapræmia ; the condition in which we find the ordinary bacteria of putrefaction or decay, the bacterium termo. In the latter the mischief may be either from exo-sepsis or auto-sepsis, and it is this variety which is connected with swarms of micrococci or bacilli of pathogenic nature. I do not think we can as yet decide whether the one may or may not pass into the other ; clinically we might reasonably expect so, but if so, if the generation of the pathogenic from the non-pathogenic conditions is possible, it has not yet been proved ; and the patient suffering from endo-sepsis is a most likely soil for the implantation of exo-septic mischief. The pyæmic organisms differ from the septic, inasmuch that they grow on the bloodvessels causing their sides to adhere, form colonies, thromboses or plugs, and multiple abscesses. In erysipelas the organisms are found either primarily or from an early period in the lymphatics. I am sure that, in their wide experience, Professor Simpson and Dr Angus Macdonald have seen cases of erysipelas existing in puerperæ without puerperal septicæmia. Dr Macdonald's case mentioned showed that, until, from spreading, the disease reached the genitals, no septic infection took place. While erysipelas is a grave condition sometimes, yet in many cases it exists in puerperal or pregnant women simply as a local affection ; personally I have recorded such cases. There are certain theories, apart from micro-organisms, we must not lose sight of : the changed state of the blood (which I need not enter on), the excess of lactic acid from muscular exertion during

labour, the deficiency of phosphates from expenditure of nervous energy, and the formation of the peptones alluded to by Dr Hare. For the establishment of puerperal septicæmia, we need a special condition of the system, blood, etc., a special poison (?) and its entrance at the proper time. As many of the Fellows are aware, I have devoted much thought to the subject of metria. In my paper published in 1875, and more fully in 1880 in the *Obstetrical Journal*, I postulated that " puerperal fever exists at least in one form as a disease *sui generis ;* " or, with more recent and exact definition, I might now say that puerperal septicæmia or puerperal septic infection, not puerperal septic poisoning or endo-sepsis, exists in one form as a distinct disease ; and this because, and here I give the reasons as briefly as possible,—(1) at times large numbers of puerperal women are affected with fever, (2) this is not solely dependent on septic material conveyed manually, (3) nor on erysipelas, (4) nor is it ordinary pyæmia or septicæmia, (5) it is contagious, (6) like typhus, etc., complications of varying nature may appear, (7) it is most virulent in hospitals, (8) and distinct from its complications, peritonitis, metritis, etc., (9) it is infectious to fœtus in utero or newly-born child, (10) exists as an epizootic when epidemic or endemic, (11) post-mortem appearances are not more inconstant than in other general diseases, (12) in course of epidemic may become pandemic—new comers more liable to infection than residenters. I have also urged that there is a special state of the nervous system predisposing to septicæmia. We may ask what influence have microorganisms on septicæmia ? do they cause it or follow it ? In some cases, infectious, the one ; in others, poisoning, the other probably. If there is any special microbe, then there is a special disease. True, such has not yet been shown to exist, yet manifestly different diseases, such as I have already mentioned, cannot in reason be supposed to be due to but one variety of micro-organism. There are doubtless great difficulties in estimating the differences. When we see certain observers using powers of 400, others 700, others 1600, others 2600, it is not easy to rely on all the measurements as distinctive. Colour shows some difference. Osteo-myelitis has a yellow, acute abscess a white microbe ; the former disease cannot be produced from inoculation by the specific micrococcus unless there is diseased bone somewhere. The selective affinities of microbes are as yet but imperfectly understood. Why Koch's field mice were proof against the septic infection of the house mice ? why Koch, Davaine, and Pasteur, have severally got different results with their various artificially prepared sepsines ? are questions we cannot as yet answer. How do the microbes gain admittance in puerpera ? By the skin possibly, by the lungs very probably, by the vagina without doubt. Every puerperal woman, aye, almost every pregnant woman after the sixth or seventh month, is theoretically a suitable and likely nidus for the development of

septic mischief. That Nature has as much to do with the pre-
vention of such mischief as Art, in the great majority of cases, is
indisputable. Every puerperal woman is a suitable case for ordin-
ary putrefactive micro-organisms to form—do they always do so?
In many cases, yes ; in others it is more than doubtful. Now, if
owing to certain influences these might become modified into
pathogenic formations, the whole question would be easily solved.
Is this so? Present opinion is adverse to such a belief, yet certain
putrefactive changes doubtless modify the resistent power against
an inpouring of exo- or auto-septic microbes. The ante-partum
existence of puerperal fever or septicæmia cannot be explained
away, as has been attempted by certain disciples of the germ-after-
theory school. Fordyce Barker, Campbell (in the Edinburgh
epidemic of 1822), and I, have mentioned several cases, and many
others exist in literature. Well, we have certain cases of distinct
septic infection, or septic ærial transference, or exo-sepsis, or
doubtfully, very doubtfully, purely auto-sepsis ; these cases are
rapidly fatal, and leave little or no post-mortem explanatory con-
dition. Can these cases be due to the invasion of microbes? or
can they be explained by spontaneous genesis of the micro-
organisms? The alkaloid of Bergmann referred to by Dr Hare,
and described as a yellow crystal-like body, has received little
notice ; how much it deserves I will not presume to say. Sir
James Simpson's time-honoured comparison of the post-partum
uterus to a stump left after amputation was an imperfect com-
parison : the one is a physiological, the other a pathological con-
dition ; the one is natural, the other artificial. The septicæmia,
closely allied to pyæmia, may be almost regarded as similar. In
pyæmia the deposit of organisms then forming zooglea or colonies,
and the resulting thrombotic conditions, are well-linked parts of
but one chain. The second heading of Dr Barbour's valuable
paper is of unquestioned importance. I regret that I, having
already occupied so much time, can only touch it in outline.
Antiseptics may be divided into two classes—those used as local
or external, or in- and external, and those given internally by the
mouth, rectum, or skin. We have to consider, first, the routine
treatment in all cases. After delivery I generally advise the
application of a napkin scorched at the fire, frequently changed,
and the bathing of the external parts with whisky and water,
half and half, twice or thrice daily for the first two or three days.
When the patient can procure them, I strongly advise sanitary
towels in preference to the ordinary, often imperfectly purified,
napkin. Hartmann's wood-wool antiseptic towels are excellent.
A piece of Gamgee tissue, which has been soaked in perchloride
of mercury solution and rapidly dried, makes a capital substitute.
This is very cheap, and of course is burned after use. Iodoform
gauze is good, but the smell is objectionable, and any gauze is
irritating. Regarding the routine use of vaginal or utero-vaginal

douches, whether by syringe or fountain irrigator, I have decidedly
modified my opinions within the last year or two. Formerly
I regularly insisted on their use twice or thrice daily, when any
person, either nurse, or even experienced intelligent relative or
neighbour, could be got to do the duty. I have used carbolic acid,
Condy's fluid, boracic acid, solution of mercuric perchloride, etc.;
the first three I had used for over seven years. Now, I
have often seen prolonged after-pains, uterine colic, and sometimes
pelvic cellulitis from the use or abuse of these procedures. I
latterly have relied on thoroughly bathing the external parts with
the perchloride solution 1 to 1000, and in nine out of ten cases
use no douche. Dr Thomas of New York has, I read, recently
come to a like conviction regarding the non-necessity of the
injection. We must give all credit to the physicians of the
Maternity for the good results they have achieved from the plan
now decried, but must, at the same time, remember it is for the
general practitioner who, in 70 per cent. or more of his cases, has
no skilled nurse to carry out his instructions, that our counsels are
given. After the establishment of puerperal mischief, tenderness,
increased pulse, headache, increased temperature, etc., etc., the
treatment is wholly different; then at once, if need be, clean out
the uterus by antiseptic hand, and wash not only the vagina but
uterus also. Unless a nurse is thoroughly trustworthy this is the
physician's duty. I have, long ere mercuric chloride was talked of,
seen the best results from such a proceeding, using glacial carbolic
acid, glycerine, and water, or solution of potas. permang., boracic
acid, saturated solution reduced by one-half by hot water,
or iodine ʒij. of tinct. to pint, or thymol solution. I have
also used the perchloride 1-1000 or 2000. Salicylic acid or
chloral hydrate I have not used; I could understand the benefit of
the latter in pelvic infiltration with great tenderness, if threaten-
ing septic absorption. But in addition to these a vaginal sup-
pository of equal parts of iodoform and trisnitrate of bismuth, or
a frequently changed pledget of wood-wool or tow saturated with
eucalyptus oil, is necessary. Salicylic wool, or iodoform wool, or
mercuric gauze should be used as napkins. Bottini, of Pavia, has
recently recommended sulpho-carbolate of zinc in 2 to 5 per cent.
solution of alcohol and water, or distilled water, as a non-poisonous
non-irritating fluid of high value for vaginal injection or irrigation.
If it is really a reliable antiseptic, it should take precedence of
mercury, as we know that, at least experimentally, a serum al-
buminate is likely to be formed even with a 1 in 500 solution, which
is four times the usual strength employed. A few words in
conclusion regarding the internal treatment by antiseptics. I
can with confidence recommend carbolate of quinine. We all
from experience place quinine high. The sulpho-carbolates, mostly
of soda, I have seen of decided use; salicylate of soda is often bene -
ficial. Tincture of iodine I have seldom employed; theoretically i t

should be good.   Arsenic, as potas. arsenit., might be used advantageously.   Turpentine, formerly of high repute, possibly owed part of its renown to its antiseptic qualities.   But clinically we must resort to adjunctive treatment, reduction of temperature by diaphoresis ; the wet pack, of great value in suitable cases ; aconite, digitalis, veratrum, ergot, etc., I need but mention.   Sometimes iron is very beneficial, possibly by its action on the red corpuscles it acts as an antiseptic of the best kind.   It must be borne in mind that " certain micrococci will not grow in weak, but flourish in strong solutions of so-called germicides " (Klein).   I cannot quite accept Dr Barbour's theory that septicæmia or septic infection may be cured by antiseptics.   Indirectly, by decreasing the multiplication and activity of pathogenic micrococci, they permit the patient to live through the attack, they may hinder further development, but do not destroy existing micro-organisms. Healthy blood will probably be found the best germicide.

Dr Underhill thought Dr Barbour had done well in separating the scientific from the practical side of the question under discussion.   Further, he was very glad of the opportunity they had had of listening to the exposition of the scientific aspect of the question by Dr Hare.   They were often too apt to overlook the importance of the scientific views of such subjects.   It was long since Sir James Simpson showed the relations of the stump-like surface of the uterus post-partum to this disease, and Semmelweiss insisted upon the danger of the dissecting-room poison in the lying-in room.   It was not, however, until Pasteur brought the demonstration of the causation of this condition clearly forward, that the treatment based on this demonstration was regularly adopted. The result was that after antiseptics came to be systematically applied they had an enormous fall of the mortality from this cause, a greater fall of death-rate than had been effected by any other means.   The success which followed the adoption of perfect cleanliness gave the key to the pathology of the conditions. It seemed to him the prevention of puerperal fever was a point demanding greater attention at the present time than its cure.   They should go to their patients in a scientifically clean state, and see that all their surroundings were clean. They should bear in mind the polymorphic character of the poison they have to deal with, a poison which might come from scarlet fever, from erysipelas, from a defective drain, and from other sources.   The cause of the autogenetic form corresponded to the form of organism found in dead tissue.   If they removed the source of the infection by washing out the uterus in these cases the symptoms disappeared more rapidly than those arising from any other cause.   He believed, accordingly, that this variety of septicæmia was much more amenable to treatment than that arising from general septic poisoning.   In this case, if they removed the cause they removed the effects.   When, on the other hand, the poison

came from the outside the case was different, and the treatment was vastly more difficult. Thus it came to be most important to attend to prevention; and when they did meet with a case treatment ought to be prompt. He agreed with the others who had spoken as to the value of corrosive sublimate, and would resort to it in all such cases.

Dr Foulis hesitated to say anything on a condition about which, as it seemed to him, so little of what is really certain is known. He came to the meeting with his mind filled with doubt as to the nature of the disease which they had been discussing, and he was bound to say that nothing which had been said as yet had served to clear up any of those doubts. And so it seemed to him that, not knowing the nature of the disease, it was premature to ask, How could they apply a remedy? Were they to conclude that this new organism was the only cause of puerperal fever in all parts of the world? Was puerperal fever a name given to that form of blood-poisoning arising after-parturition only, or was it a specific fever? There were numerous forms of the fever, as Dr Underhill had pointed out. The symptoms were endless—neuralgia, fever, etc., etc. If this micro-organism, then, was the cause, was the puerperal state the only one in which it could develop? Was inflammation the process which produced the *nidus* in which this micro-organism could develop, or was the inflammation the *result* of the development of this micro-organism? If they regarded the condition of the puerpera they saw that the blood circulated in all directions, and that a poison introduced into the blood gave rise to the fever, etc., which they called blood-poisoning. If they were correct, then, in attributing the symptoms of this disease to the circulation of this poison in the blood, how, he would ask, could they explain the disappearance of those symptoms which, it was claimed, so often followed the local application of antiseptic douches to the uterus? He had abandoned the idea that puerperal septicæmia was a specific disease at all, but believed that there might be many sources of infection. Further, the poison might even be absorbed by the lungs, as in breathing an infected atmosphere tainted by the emanations from a water-closet or drain. So far as the specific cause was concerned they were, it seemed to him, in the dark. But not so much in the dark as they would be did they set aside the germ theory of the disease. That the condition arose from the introduction of germs he thought admitted of no doubt, and this ought to give them the clue to their treatment. Thus they should see that no woman had a child in a bad atmosphere; they should see that no " vaccine " material be introduced by the hand of the doctor or the nurse. He regarded the prevention of puerperal blood-poisoning by a preparatory treatment of the patient by means of certain drugs as a suggestion of a line of treatment which might prove of the highest importance. He thought the treatment by the washing out of the uterus by means of antiseptics after the development of the fever

was too late. Why not wash out the uterus as soon as the child was born, so as to prevent the development of the disease at all? To him it seemed that to wait until the fever had developed was very much like locking the door after the steed was stolen.

The President, in closing the discussion, thanked Dr Hare, a stranger, for the valuable contribution he had made to the discussion, and at the same time took this opportunity of conveying to Dr Barbour, on behalf of this Society, its thanks to him for originating the discussion, and opening it by a contribution of such scientific and clinical importance. The whole subject was admittedly a difficult one, but he thought that discussion had done much to clear the ground. For example, take the question of washing out the uterus with some antiseptic lotion in cases of puerperal septicæmia. Of the value of this there could be no possible doubt. He had himself, both in hospital and private practice, met with cases post-partum and post-abortum where marked septicæmia had set in with a high temperature, and where, after one or two washings of the uterine cavity with 1 in 2000 solution of perchloride of mercury, the temperature had fallen, the symptoms of septic poisoning disappeared, and the patient made an excellent recovery. Of the value of intrauterine antiseptic irrigation in cases of autogenetic septicæmia there could, to his mind, be not the faintest doubt. Still, till now, there was the difficulty in explaining this action. Dr Barbour had shown to-night that micro-organisms require rest for their development. They will not multiply in the circulatory fluid. The fact that they do not multiply in the circulating blood explains why the washing out of the uterus acts beneficially. It cuts off the supply of microbes, and as those already formed do not increase in the moving blood, their ultimate elimination is only a matter of strength and time. As to the value of antiseptics in obstetric practice nothing could be more remarkable than his own experience in the Edinburgh Lying-in Hospital. Entering on duty in an entirely new hospital, in his first quarter he met with an outbreak of puerperal fever, in which he lost three successive cases. He then had introduced careful antiseptics, drawing up strict rules for nurses, pupils, and resident-surgeon, and from then till now, a period of six years, he had not lost a single patient from that cause. Whatever theories might be urged to explain it, the fact remained that the adoption of antiseptics had practically stamped out the scourge of puerperal fever, not only in the Edinburgh Hospital, but at Prague, in London, in the pavilion Tarnier in Paris, in Copenhagen, and, indeed, wherever this treatment had been honestly and carefully carried out. He congratulated the Society on the discussion, and believed that whatever might be its intrinsic value as an addition to our scientific knowledge of the subject, and he believed this was great, if it pressed home on the Fellows the importance of the most minute antiseptic details in obstetric practice, the evening had been well spent.

MEETING III.—JANUARY 13, 1886.

Dr HALLIDAY CROOM, *President, in the Chair.*

I. *Professor Simpson* showed for Dr Robertson Crease A HYDRO-
CEPHALOUS FŒTUS. A. B., æt. 36, married. Family history,
good. Father died of apoplexy, aged 70 years, and mother about
the same age, of bronchitis. On the father's side, history good;
no history of any nervous or brain disease. Menstruated at age
of 14. Type, 28 days; duration, 3 days; amount abundant and
florid. In intra-menstrual period slight leucorrhœa. Has had
nine children at full term, all healthy at birth. Her second
child, a boy, at age of 2½ years, had an attack of acute polio
myelitis anterior, and is living. Her first child, female, was
still-born, no motion having been felt by the mother for some
days previous to birth. The mother is of medium height, well
developed. Pelvic measurements—Interspinal, 10 inches; inter-
cristal, 11½ inches. Her last menstrual period ended on 2nd March
1885, and she was delivered on 4th January 1886. She states
that she has been more or less in pain since 25th December, and
that labour began by the escape of the waters on 1st January.
I was sent for on 4th January in the afternoon, and found, on
examination, the pelvic cavity was filled by a tense fluctuating
mass, which, on careful examination, was found to consist of head
of child, fontanelle of which were enormously expanded, and the
bone thin. Pains were vigorous, and by this time, and when the
head had fully distended the perineum, fearing that it would not
pass without the size being diminished, preparation was made for
perforation. A drachm of extr. ergot. liq. was administered. The
next pain was sufficient to expel the mass *en bloc.* The placenta
was expressed, and the patient has recovered without a single bad
symptom. Out of 3476 tabulated cases which have occurred in
my practice, I have only met with three dropsical cases, viz., the
above-mentioned hydrocephalic, one case ascites, and one hydro-
thorax. The two latter had to be delivered by forceps after much
difficulty. Length of child, 22½ in.; circumference at chest, 13½
in. Head diameters—occipito-frontal, 6 in.; occipito-mental, 6½
in.; sub-occipito-bregmatic, 4¾ in.; biparietal, 5 in.; bitemporal, 4½
in.; trachelo-bregmatic, 4½ in. Circumferences—occipito-frontal,
17 in.; occipito-mental, 17½ in.; sub-occipito-bregmatic, 15¾ in.
The chief points that call for special notice are—the duration of
pregnancy, the length of the first stage of labour, the size of the head,
and the peculiar way in which it was projected in an elongated
form over the perineum, and no rupture of uterus or perineal tear
taking place.

II. *Mr Skene Keith* showed an OVARIAN TUMOUR, which had been
characterized by marked slowness of growth, taking 4½ years to attain
its size at the operation. The cause of this tardy growth seemed

to be a twist on the pedicle. The tumour was firmly adherent, and on this account the direction of the twist could not be certainly determined. Though the operation had been attended with considerable difficulty on account of the adhesions, the patient had done well.

III. *The President* showed (1) for Mr Lawson Tait TWO PAIRS OF OVARIES AND TUBES, which he had removed from patients of his (the President's) during a recent visit. The one patient was suffering from a very large bleeding fibroid, which had already (three weeks since the operation) become considerably reduced in size. The patient has otherwise done remarkably well, and was then sitting up for some hours each day. The other ovaries were removed from a woman who, seven years ago, had been delivered of a child after a prolonged and instrumental labour. Since then she has led a life of almost continuous and intense suffering, so that she has been entirely unfit for her domestic duties. There was intense dysmenorrhœa and dyspareunia. The ovaries were matted down in the pouch of Douglas, and exquisitely sensitive. The patient was now completely free of pain, and was discharged that morning, twenty-five days after the operation. (2) A PHOTOGRAPH of enormous enlargement of the mammæ in a woman, aged 19, in the fourth month of pregnancy.

IV. NOTE ON A CASE OF RETENTION OF URINE FROM AN UNUSUAL CAUSE.

By J. HALLIDAY CROOM, M.D., F.R.C.P.E., F.R.S.E., Physician to the Royal Maternity Hospital ; Physician for Diseases of Women, Royal Infirmary ; Lecturer on Midwifery and Diseases of Women, Edinburgh.

IN a paper which I read to this Society some time ago, I discussed in detail the various causes which gave rise to retention of urine in the female. As a short addendum to what I then said, and as, so far as I know, this cause is entirely unique, I propose to relate the following case :—

A young gentleman from one of the hotels in town brought, one afternoon, his wife to my consulting-room, telling me that she was in great distress from a swelling in her belly. Finding it impossible to examine her carefully in my room I went to her hotel, and found on examination a tense round dull tumour extending up to the umbilicus. She informed me that she had passed water recently, and had a constant desire to do so. Before proceeding further, I did what I always do in all pelvi-abdominal tumours, viz., introduced a catheter. As a result I removed about 2 quarts of urine. Being at a loss to know the cause, on inquiry I found that she had been married two days previously, and that since the night of her marriage she had complained of more or less distress, and had passed water only in very small quantities since. On ex-

amination, *per vaginam*, I found that the hymen, which was unusually thick and fleshy, and which was of the usual crescentic form, had been completely torn in the centre, and that the mucous membrane covering the posterior vaginal wall had been deeply lacerated for at least an inch.   At the time of first intercourse there had been considerable pain, and some hæmorrhage, the patient stating that afterwards she had felt sick and faint.   Both parties believing what had occurred to be the usual state of matters, the husband renewed his attempts later on in the morning, but since that time until she saw me no further intercourse had taken place.

I mention this case, firstly, for its extreme rarity.   Irregular ruptures of the hymen have been already discussed in this Society, in an exhaustive paper communicated by Professor Schroeder, although no mention is there made of deep laceration of both hymen and vaginal wall such as that I have described.   Twice before I have seen as a result of violent intercourse considerable and even deeper laceration of the posterior vaginal wall than in the present case, but unassociated with retention of urine. Secondly, the case belongs to that class of retention cases which are reflex in their causation.   It belongs exactly to the same class as retention of urine in the puerperal woman from laceration of the perineum, or as in retention arising from a urethral caruncle.

Winckel has shown, and in the paper by myself to which I have already referred, I found that catheterism is more frequently required in childbed, the greater the injury to the perineum, and it is probable that the relation between the necessity for catheterism and hymeneal laceration may be even closer.

The retention of urine is, in my opinion, not due, as some have said, to the patient voluntarily retaining her urine from the dread of allowing it to come in contact with a raw tender surface, and as a consequence, the retention becomes involuntary from over distension and temporary paralysis of the muscular coat of the bladder.   Rather is it due to a reflex mechanism.   It seems to me that this case, in common with all those of perineal laceration accompanied with retention, arises from tonic spasm of the sphincter vesicæ, caused by the stream of afferent stimuli reaching the centre from the nerve-endings in the lacerated wound.

Professor Simpson regarded this as an important clinical observation.   He had frequently seen laceration of the perineum giving rise to this condition, but retention from the cause recorded was new to him.

Dr Milne Murray said that the symptoms of this case and those arising from laceration of the perineum recalled a classical experiment of Goltz.   On sponging the anus of a dog with warm water, micturition almost invariably followed.   This can always be

instantaneously stopped by pinching the skin or mucous membrane in the vicinity of the anus with forceps. No doubt the afferent stimulus reaches the corresponding centre in both cases, and induces spasm of the sphincter. An observation which he himself had made recently seemed to point to an identical mechanism in the rabbit. In the research on which he was at present engaged on the uterus of rabbits, it was necessary from time to time to empty the bladder, which filled rapidly, apparently under the action of the anæsthetic as a diuretic. Evacuation of the bladder was usually effected by applying the electrodes from the induction coil to the fundus of the bladder. On the occasion referred to, he found that the strongest current available failed to cause emptying of the viscus, and resulted merely in an irregular vermicular contraction of the walls of the bladder. Subsequently, when the bladder had become enormously distended, a canula, which had been fixed into the rectum by a ligature passing through the tissues round the anus, was removed, and the moment the ligature was cut and the compressed parts released, the bladder emptied itself with great force. This seemed to him an interesting observation, as confirming the view that the retention following laceration or injury of the perineum was a purely reflex result, and was in no way caused by a dread on the part of the patient of allowing the urine to flow over the raw surface. Goltz's experiment on the dog and his own observation on the rabbit seemed to him to place the reflex character of the condition beyond doubt.

V. ON THE POSITION OF THE UTERUS AND OVARIES IN THE CHILD, WITH REMARKS ON THE GROWTH OF THE FEMALE GENITALS.

By J. SYMINGTON, M.D., F.R.S.E., Lecturer on Anatomy, School of Medicine, Edinburgh.

Uterus.—The attempts that have been made to determine the position of the adult uterus by an examination of the cadaver do not appear to be regarded by some gynecologists as of much value in the settlement of the vexed question of its normal position; indeed, the results obtained by this method would appear to be frequently considered misleading, erroneous, and in direct opposition to the results of clinical observation.

Hart and *Barbour*,[1] in referring to the chief means employed in order to ascertain the situation of the uterus, state that frozen, spirit, or chromic sections " are not specially valuable, as there is some post-mortem change in the uterine position not yet thoroughly understood," p. 50.

Schultze,[2] in contrast with his well-known views as to the

[1] *Manual of Gynecology*, 1882.
[2] *Lageveränderungen der Gebärmutter*, 1881.

position of the uterus in the living body, says that in the cadaver its position is not constant, but in the majority of cases it is found with its hinder surface lying against the posterior wall of the pelvis, or, at least, in contact with the anterior wall of the rectum.

H. Fritsch[1] holds that the gynecologist can obtain no assistance in this difficult subject from anatomical preparations, and that what careful clinical observation fails to discover is scarcely to be brought to light in any other manner.   In Fig. 1 of his work he gives a diagrammatic mesial section of the female pelvis to illustrate the physiological position of the uterus with the bladder and rectum empty.   The uterus is shown anteverted and anteflexed, and lying upon the bladder.   In contrast with this his next figure shows the position of the uterus in the cadaver, with bladder and rectum also empty.   In this case it is represented as retroverted, and lying up against the rectum.   It appears to me that the value of post-mortem studies in connexion with this subject has been unduly depreciated, and that the post-mortem changes in the position of the uterus have been greatly exaggerated.   Clinical observers are generally agreed that, in the living body, if the bladder be empty, the uterus is more or less anteverted, and that whilst Schultze may have somewhat exaggerated the degree of anteversion, his views are in the main correct.   It seems to be very frequently assumed that this is not the position which the uterus is found to occupy after death, the uterus being in the latter case retroverted.   In support of this we are referred to drawings of frozen sections by Henle, Cruveilhier, Luschka, and Braune, and to the very positive statements of Claudius[2] of Marburg, who asserted that "the uterus is only in its normal position when along with the broad ligaments it touches the posterior wall of the pelvis and the rectum."   Henle's[3] section, which is often employed to illustrate the post-mortem position of the uterus, shows that organ retroverted, so that its long axis is nearly parallel with that of the vagina.   For several reasons this woodcut is of but little value.   We have no definite information as to how much of the body was frozen, and the drawing itself presents several unusual features, which indicate an abnormal condition of the uterus.   The woodcut in Cruveilhier's *Traite d'Anatomie*, 5th edition, 1874, like almost all the illustrations in that work, is simply a copy of Henle's.   The sections of Luschka[4] and Braune[5] show the uterus retroverted ; but, on the other hand, a number of specimens have been figured by very reliable authorities in which the position of the uterus closely corresponded

[1] *Die Lageveränderungen der Gebärmutter*, 1885.
[2] *Medical Times and Gazette*, 1865.
[3] *Handbuch der Anatomie.*   Eingeweide, fig. 340.
[4] *Die Lage der Bauchorgane*, 1873.   Pl. 5, fig. 3.
[5] *Topographisch-anatomischer Atlas*, Leipzig, 1875.   Pl. 2.

with the results of clinical examination. This will be readily apparent by a reference to the following works:—

E. Q. LE GENDRE.—*Anatomie Chirurgicale Homalographique*, Paris, 1858. Plate 18.—Mesial section of pelvis of woman aged 30, probably multipara. Uterus anteflexed.

RÜDINGER.—*Supplement zur topographisch-chirurgischen Anatomie des Menschen*, 1879. Plate 4.—Coronal section of body of female aged 21. Fundus of uterus directed forwards and to the right.

HASSE.—"Beobachtungen über die Lage der Eingeweide im weiblichen Beckeneingange," *Arch. f. Gynäk.*, Bd. ix. Uterus anteverted.

HIS.—"Über Präparate zum Situm Viscerum," *Arch. f. Anatomie*, 1878. He figures 4 female pelves, in all of which the uterus is anteflexed and anteverted.

FÜRST.—"Ein einfach plattes Becken, u. s. w.," *Arch. f. Gynäk.*, 1877. Uterus anteflexed.

D. B. HART.—*Topographical and Sectional Anatomy of the Female Pelvis*, 1885. Plate 2.—Mesial section of pelvis of adult woman. Long axis of uterus nearly coincided with axis of inlet.

All the above-mentioned plates are drawings of frozen preparations except those of His; the latter hardened the viscera *in situ* by injecting into the bloodvessels a solution of chromic acid. This list is by no means an exhaustive one, but it is evident from it that the results of clinical and post-mortem examinations are not so widely opposed as some would make us believe.

I have ventured to wander somewhat from the immediate object of my paper, because the existence or amount of displacement of the uterus after death is especially important in connexion with the determination of the position of this organ in the child, as in them we must depend almost entirely upon the study of the cadaver. Even were it desirable to make digital examinations of the pelvic organs in children, the small size of the body of the uterus would render the diagnosis of its position almost impossible. Subjects are usually frozen lying upon their backs, and in this position the large and heavy body of the adult uterus would tend to become displaced backwards more readily than this organ would in the child, where it is not only absolutely but even relatively smaller. Still, had it been proved that the adult uterus fell back after death into the retroverted position, this would have diminished to some extent the value of any deductions that might be drawn from its post-mortem examination in the child.

Compared with the enormous amount of literature bearing upon the question of the position of the uterus in the adult, its relations in the child have been, comparatively speaking, neglected. It is true that numerous expressions of opinion on this subject can

readily be found; but so far as I am aware there are no published drawings of frozen sagittal sections of the pelves of females between the periods of infancy and adult life, except two rather diagrammatic figures by Pirogoff of girls twelve and seventeen years of age, and a plate in Le Gendre's work made from a girl eighteen years old.   In the latter both bladder and rectum were distended, and the uterus fixed between them.

D. B. Hart's very valuable and extensive *Atlas of Female Pelvic Anatomy*, 1884, contains no illustrations bearing upon this subject, and this is also the case with Martin's *Atlas of Obstetrics and Gynæcology*, translated by Fancourt Barnes, 1881.

In 1853 Boullard published a thesis,[1] in which he asserted that the uterus of the child was normally anteflexed, the flexion occurring at the union of the body with the larger and more rigid cervix. The opinion of Boullard has been widely accepted, and is still often taught, especially by French gynecologists.   Thus A. Courty[2] writes: "In the child the neck (of the uterus) is very large, the body very small. . . . The isthmus is indicated at this age less by a contraction than by a change of direction between the neck and the body, for the results of Boullard's researches, confirmed by my own observations, is that there is very frequently, if not always, anteflexion of the body on the cervix."   Anteflexions of the uterus are usually divided into the congenital and the acquired.   In referring to the former Courty writes: "This is an exaggeration of the usual conditions of form and inclination of the uterus in the fœtus, in the child and young girl at puberty, often even in the adult multipara" (p. 427).

Several very competent observers do not support the generally accepted idea that the child's uterus is normally anteflexed.   For instance, Klob[3] says, p. 56: "Up to the commencement of puberty the uterus is neither bent forwards nor backwards; only at the development of that period does it assume a slight curve forwards, the angle of the curve coinciding with the level of the internal orifice."

Langerhans[4] made sagittal frozen sections of forty new-born female children, but, unfortunately, his results have only been published in abstract and without illustrations.   He generally found the uterus anteverted and anteflexed, but never met with a retroversion.

Bandl[5] found the uterus in the new-born child sometimes straight, at other times slightly flexed.   He believes that the

[1] *Quelques mots sur l'uterus*, Paris, 1853.
[2] *Practical Treatise on the Diseases of the Uterus, etc.*   Translated from the third edition by Agnes M'Laren, 1882.
[3] *Path. Anatomy of the Female Sexual Organs.*   Translated by Kammerer and Dawson, 1868.   [4] *Arch. f. Gynäk.*, Bd. xiii.
[5] *Centralblatt f. Gynäk.*, No. 10.

membranous body, as opposed to the firmer cervix, renders an alteration in the axis of the uterus in the cadaver very probable, but he doubts if it exists in the living. In older children, in whom the body of the uterus has acquired greater firmness, that organ is much more frequently found straight.

Kölliker [1] in a valuable monograph gives the results of his examinations of the uterus in the fœtus and child. He says that up to the sixth month of fœtal life the relations of the uterus and vagina are such that flexion of the uterus cannot occur. Towards the end of fœtal life and the first year after birth a slight degree of anteflexion occurs, which may be due to the body being thinner than the cervix. This anteflexion is also favoured by the fact that while the fundus is fixed by the tense round ligaments, so that it cannot move backwards, it is pressed upon from above by the sigmoid flexure, and is thus bent forwards. He believes, however, that many uteri of about this age are straight, or show only a slight S formed curve, of which the upper part is concave forwards. Kölliker gives drawings of a frozen sagittal section of the pelvis of a new-born child, and also one of an infant nine months old. He has a drawing of a mesial section of the pelvic viscera of a girl aged 17 years, but, unfortunately, it was made after the removal of the viscera from the body.

From the above summary of the literature of this question it will be seen that not only is the position of the uterus in the infant still a subject of dispute, but also that satisfactory observations respecting its relations in children of more advanced age are very limited.

In several female children I have endeavoured to determine the position of the uterus by means of frozen sections. In all of them the entire body was frozen, the pelvis divided in the mesial plane, and the sections carefully traced before they thawed. In addition to a few fœtuses I have made sections of female children aged six weeks, two months, six months, fifteen months, one year and ten months, two years and two months, six years, and thirteen years.

In the fœtus the empty bladder is flattened from before backwards, and on vertical mesial section its cavity forms with that of the urethra a continuous slightly curved line. At this time the bladder reaches higher up than the uterus, and the whole of the anterior surface of the latter lies in close contact with the bladder.

The rectum is usually distended with meconium, and lies in contact with the uterus, so that there are no coils of intestines in the pouch of Douglas. The axes of the uterus and vagina form a very obtuse angle.

Fig. 1 represents a life-sized drawing of a section of the pelvis of a child aged six weeks. This infant was only 17 inches in length, and the centre at the lower end of the femur was very small. It was probably born at the seventh or eighth month, and may be regarded as corresponding to an ordinary nine months'

[1] *Uber die Lage der weiblichen inneren Geschlectsorgane*, 1882.

fœtus. It will be seen that the bladder is still almost entirely an abdominal organ. The uterus was displaced to the right side, so that after the mesial section of the pelvis had been made, a slice had to be removed from the uterus, in order to open its cavity. The uterus was anteverted, and also somewhat anteflexed. When I received this infant, the abdomen was greenish and some-
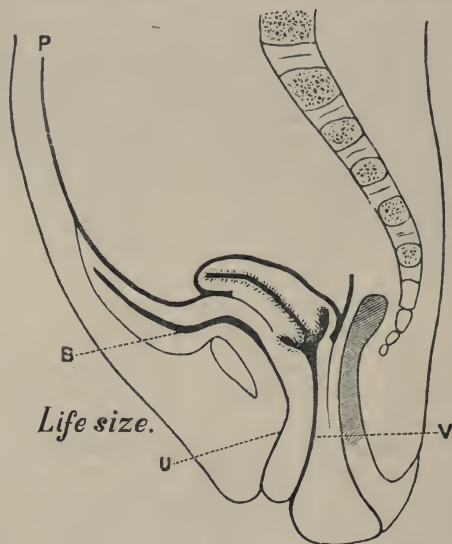

FIG. 1.

what distended with gas. This probably accounts for the ante-flexion, and also increased the anteversion, the distended intestines having pushed the uterus and also the bladder downwards and forwards. It must be remembered that the lateral displacement of the uterus favoured the anteversion and anteflexion, since the bladder projects farther back in the mesial plane than at the sides.

About the time of birth a series of important changes commence in the pelvis and the contained viscera, which must have a marked influence upon the position and range of mobility of the uterus. The pelvis increases in size more rapidly than the portion of the trunk above it; the bladder not only descends, but also alters its shape; the rectum becomes more tortuous, and the axes of the vagina and urethra become more horizontal. In order to trace the progressive steps of these changes and their effects upon the position of the uterus, we require a series of mesial sections of the bodies of females from early infancy to adult life. Unfortun-ately there is no such complete series, but we can state generally the main results. As we have already seen, the fœtal bladder is flattened from before backwards, so that it only possesses anterior

and posterior walls. Soon after birth it begins to descend into
the pelvis. The lower end of the bladder does not move down so
much as the upper part. Such being the case, it can easily be
understood how a fold is formed behind the urethra—the posterior
limb of the empty diastolic bladder (Hart). The time of forma-
tion of this posterior limb varies somewhat, but I have several
times seen traces of it in newly born male children.

Fig. 2 represents a section of a child aged two months, in which
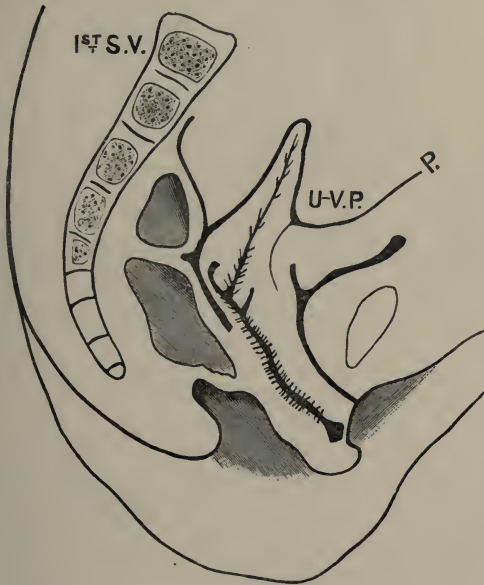

FIG. 2.

the bladder was empty. The posterior limb was quite distinct in
this case. The child was well developed and rather fat. The
uterus was straight, and intestines lay in front of it and upon
bladder.

Fig. 3 was taken from a section of a child fifteen months old. It
shows the effect of a distended bladder in pushing back the
uterus.

In the children, one year and ten months and two years and two
months, the bladder was empty; in the former the uterus was
retroflexed, and in the latter anteflexed. These, however, cannot
be regarded as normal sections, the displacements of the uterus
being the result of pressure upon the abdominal walls. I used
these bodies for the purpose of ascertaining the alterations in the
position of the larynx in over-distension and acute flexion of the
head, and in fixing them in position before freezing, pressure was
made upon the abdominal walls. They show the necessity of
care in the manipulation of the body after death.

The most interesting specimens that I have to bring under your notice are those of the sections of the pelvis in two girls aged six years and thirteen years respectively.[1]
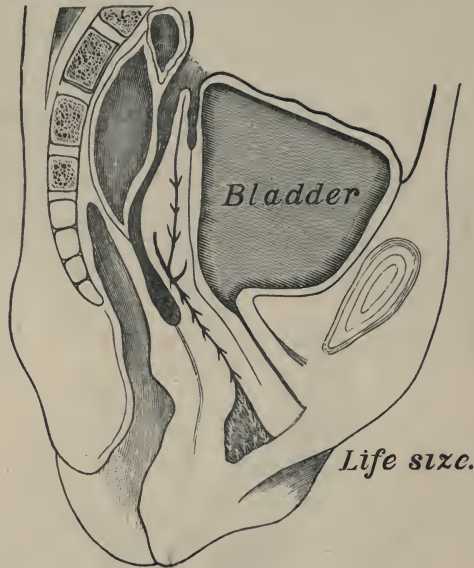

Fɪɢ. 3.

In the girl six years old, the trunk was divided by a series of horizontal sections down to the level of the umbilicus, but the pelvis was divided by a vertical mesial section. The bladder was empty, and afforded an excellent example of its configuration when in diastole. Its upper surface was concave and covered by the peritoneum. Its anterior surface, which looked downwards as well as forwards, was in contact with the lower part of the anterior abdominal wall, the back of the pubes, and the retropubic pad of fat (Hart). The posterior surface, which looked backwards and slightly downwards, was in relation to the cervix of the uterus and the upper part of the anterior vaginal wall. Both the anterior and posterior surfaces of the bladder were devoid of peritoneum. If a mesial section be made of a pelvis, in which the bladder is in diastole, the cavity of the bladder, along with that of the urethra, possesses a Y-shaped form, the two limbs of the Y being formed by the bladder and the stem by the urethra. In this case the anterior limb of the bladder was about 3 cm. in length, and the posterior nearly 2 cm. The axis of the uterus was straight, there being no indications of anteflexion or retroflexion. Its direction nearly corresponded with the axis of the pelvic

[1] I hope to publish shortly a work containing coloured lithographic plates of these two specimens.

inlet, but it was more vertical. There were no traces of peritonitis nor of adhesions, but the space in front and behind the uterus was occupied by serous fluid, the coils of the small intestines having been floated up above the level of the top of the uterus. It is difficult to estimate the effect of this fluid upon the uterine position. As the uterus was less anteverted than usual, we may assume that the uterus had sunk in the fluid, but it is worthy of notice that it nowhere touched the rectum.

The girl aged 13 years was well developed. After the body had been thoroughly frozen in the horizontal position a vertical mesial section was made of the entire body. The pelvis was divided almost exactly in the mesial plane, but in consequence of a slight displacement of the uterus to the left side only the upper part of its cavity was opened. The bladder contained a small quantity of frozen urine, and the rectum was empty. The walls of the bladder were much thicker than they are usually represented in diagrammatic sections. The urethra was $1\frac{1}{4}$ inches in length. The anterior vaginal wall measured 2 inches, and the posterior $2\frac{1}{2}$ inches, or nearly the average length in the adult. The pouch of Douglas contained a loop of small intestine. After the left half of the section had been traced, embedded in plaster of Paris and hardened in spirit, I removed a thin slice from the uterus so as to open its cavity in its whole length. Fig. 4 was made from a
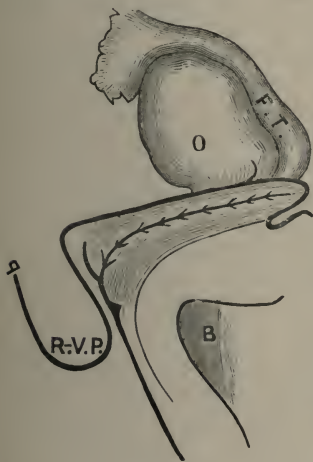
FIG. 4.

careful life-sized drawing of this section of the uterus. From this figure it will be seen that with the exception of a slight curve near the external os the axis of the uterus was straight. Although there were no traces of any flexion of the body upon the cervix, still there was marked anteversion, the uterus lying upon the bladder, and its long axis forming with the horizon an angle of about 20°.

These specimens support generally the views of Klobs, Bandl, and Kölliker. The recognition of a class of anteflexions as "congenital" in the belief that the uterus is normally anteflexed in the infant, and that they represent a persistence of that condition, appears to me to be based upon an erroneous conception. I believe that the uterus is less anteverted in the child than in the adult, but probably the adult uterus is more frequently anteflexed.

Ovaries.—The ovaries, like the testicles, are at first situated in the abdomen; and in the process of development both these organs descend, the former into the pelvis and the latter into the scrotum.

While, however, the testicles usually reach their permanent position in the scrotum before the end of fœtal life, the ovaries in the new-born child are usually found lying at the brim of the true pelvis, with only their uterine ends projecting into its cavity. Very soon after birth they descend, so as to lie against the upper part of the side wall of the pelvis, their upper extremities being internal to the external iliac arteries, or often just below them. They have now acquired a position practically similar to that in the adult, but perhaps a little higher.

The want of agreement in the results of the researches of Schultze, His, and Hasse on the position of the ovaries may be regarded as demonstrating that it is not constant; but I think that most of the variations can be easily explained. The ovaries usually lie in a sagittal plane against the side walls of the pelvis, with their long axes more or less vertical, so that their surfaces are internal and external, borders anterior and posterior, and extremities superior and inferior. Fig. 4 shows the left ovary in a girl aged 13 years, which was exposed from the inner side by making a mesial section of the pelvis, and then removing some coils of the intestine. From this it will be noticed that the Fallopian tube runs upwards along its anterior border, and then arches backwards above its upper extremity. The ligament of the ovary passes outwards, and then turns upwards to be attached to the lower end of the ovary. A fold of peritoneum, called the infundibulo-pelvic ligament, descends from the brim of the pelvis to the ovary. The ovary is not firmly fixed in any one position, but, like the uterus, it possesses normally a considerable range of mobility. The alterations in its position are mainly due to changes in the uterine position. Schultze[1] has shown that if the uterus be well anteverted, the ovarian ligaments draw the lower ends of the ovaries downwards and forwards, so that their long axes are directed from above downwards and more or less forwards. As the body of the uterus moves upwards and backwards, the ovaries are pushed in the same direction, but their lower ends more than their upper ones, consequently their long axes come to incline from above downwards and more or less backwards.

Lateral displacements of the uterus are very common, and His[2] has shown that this influences the position of the ovaries. Thus if the uterus be displaced to the left side the right ovarian ligament is put upon the stretch, and draws the lower end of its ovary inwards, so that instead of lying vertical it tends to become transverse.

I have satisfied myself, from an examination of the ovaries in children, of the correctness of the views of Schultze and His; but

[1] *Die Pathologie und Therapie der Lageveränderungen der Gebärmutter.* Berlin, 1881.
[2] "Die Lage der Eierstöcke in der weiblichen Leiche," *Arch. f. Anat.*, 1881.

as the ovaries in young children are softer than in the adult, they are very apt to become altered in shape from the pressure of neighbouring organs.

Growth of Genitals.—The sexual organs are generally believed to undergo a special and marked increase in size as well as in functional activity at the period of puberty. We possess, however, very few accurate observations as to the growth of the male genitals; and even in the case of the female organs, attention has been almost entirely confined to the uterus. The uterus of a new-born child differs not only in size, but also in its external and internal configuration, from that of the adult. The cervix is longer, thicker, and firmer than that of the body. On opening its cavity the arbor vitæ will be found extending along its whole length—body as well as cervix —and there is no constriction corresponding to the internal os. Some authors give precise measurements of the relative length of the cervix and body; but in reality it is not easy to distinguish precisely the boundary between these two portions, since there is no internal os, and the arbor vitæ reach to the top of the uterus. The upper third or so is generally much thinner and more flexible, and may be taken as representing the body.

It is generally stated that the uterus undergoes little or no change until puberty, when it rapidly increases in size, the body growing faster than the cervix, so that the uterus soon acquires its adult characters. The arbor vitæ are said to disappear in the body of the uterus about the fifth or sixth year, only a median ridge remaining, which is usually obliterated at puberty.

Kölliker[1] says that he knows no organ that varies, in different subjects of the same age, so much in its size and development as the uterus during the latter months of fœtal life, in the new-born child, and in the girl up to puberty. The uterus of a new-born infant may have the walls of its body so thick and firm that a flexion appears very improbable; and, on the other hand, in a girl 10 years old they may be very thin and flexible.

Subjoined will be found a table giving the length of the uterus, and notes with regard to the arbor vitæ, prepared from specimens in my own possession. I have also added those described by Kölliker, which are indicated by the letter K. The list is by no means so complete and extensive as I should wish, but I have not yet finished my investigations on this subject.

An examination of the table supports, to a certain extent, the views of Kölliker. The average length of the uterus in the new-born child seems to be about 2·5 cm., but Kölliker had one nearly 1 cm. longer. The three girls 16 years of age differ very considerably one from another; but this is easily understood, as it is well known that the period of puberty varies greatly in different individuals. My own specimens go to prove that the uterus does not undergo any marked increase in size between infancy and

[1] *Op. cit.*, p. 13.

F

puberty. Thus all of them, with the exception of that of the girl aged 12½ years, were of the infantile type, the body of the uterus being very thin.

The time of disappearance of the arbor vitæ from the body of the uterus seems to be somewhat variable. Thus in one specimen from a girl aged 6 years they were very indistinct, while they were well marked in children 9 years and 13 years old.

The rest of the genitals appear to grow more uniformly with the body generally than does the uterus. In the girl aged 13 the ovaries, Fallopian tubes, and vagina were much better developed than the uterus, and in several of the specimens in which the uterus was still infantile, the ovaries were nearly as large as in the adult.

Age.	Length of Uterus.	Remarks.
New-born.	2·5 cm.	Arbor vitæ distinct in both body and cervix.
Do.	2·5 „	Do.
Do.	2·6 „	Do.
Do.	3·0 „	Do.
Do.	3·4 „	K.
6 weeks.	2·0 „	Do.
2 months.	2·5 „	Do.
5 „	2·4 „	Do.
6 „	2·8 „	Do.
1 year 6 months.	2·5 „	Do.
1 year 6 months.	2·5 „	K.
6 years.	2·5 „	Do.
6 „	2·8 „	Do.
6 „	3·0 „	Arbor vitæ very faint in body.
7 „	2·6 „	Arbor vitæ distinct in both body and cervix.
7 „	3·0 „	Arbor vitæ faintly marked in body.
9 „	2·10„	Arbor vitæ distinct in both body and cervix.
10 „	3·5 „	Arbor vitæ faintly marked in body.
10 „	3·1 „	K.
12½ „	4·9 „	Central ridge in body ; fundus of uterus well developed ; adult type.
13 „	3·0 „	Arbor vitæ distinct in both body and cervix.
16 „	3·1 „	K.
16 „	4·4 „	K.
16 „	5·0 „	K.
18 „	5·3 „	K.

Professor Simpson wished first to thank Dr Symington for bringing this valuable paper before the Society. It was one of great importance, and would greatly add to the value of the *Transactions* of this session. He had followed the paper with much interest, more especially that portion of it which dealt with the position of the ovaries. The position of these organs has

always been somewhat indeterminate. Various opinions have been held as to their position. This discrepancy was probably due to the change which occurred in their position and relations in the course of their development, and it seemed to him quite likely that some of the observations had been made on ovaries whose development had somehow been imperfect, and whose position would thus differ from that of the fully developed ovary. That part of the paper which dealt with the uterus was likewise of much value, not only with reference to its direction, but also with regard to its position and relations. He hoped Dr Symington would pursue this investigation, and tell us more about it. It was interesting to note the point of the reflection of the peritoneum from the anterior aspect of the uterus to the bladder. This has been regarded by some as coinciding with the os internum. If this were true in these cases, then the os internum must be at the fundus uteri. The change in the direction of the inclination of the three canals—urethra, vagina, and rectum—was also worthy of note. While in the infantile state all three were parallel and were directed forwards, the rectum came in the adult state to alter its direction and run backwards.

Dr Hart was much indebted to Dr Symington for the privilege of hearing this valuable paper. The observations had been characterized by great accuracy. He was sorry to say that this accuracy did not, as a rule, characterize the work of anatomists on the pelvic viscera, and gynæcology had suffered accordingly. Before the important bearings of a paper such as this could be fully appreciated one must have it in print, but one or two points of special interest struck him while listening to it. 1. The relation of the bladder in determining the position of the uterus. This was a point which had been much overlooked, and he was glad to observe the importance given to the connexion. The drawings shown illustrated the well-developed state of the bladder during early childhood. 2. The presence of the *arbor vitæ* on the whole cavity of the cervix and uterus. This observation was new, and seemed to him of great interest. 3. The relations of the ovary and the Fallopian tube. He agreed with His in describing the Fallopian tube as arching over the ovary, and this view is confirmed by Dr Symington's preparations. In conclusion, he wished again to express the pleasure he had derived from the paper.

Dr Foulis was able to support Dr Symington's views as to the position of the ovaries, from a prolonged series of observations he made some years ago. Dr Foulis then sketched the process of development of the ovaries from the Wolffian bodies, and showed how their position depended on their development from this structure. From the relations of parts, their position would at first necessarily be vertical, but this position would be gradually modified, and become nearer horizontal as the development of the organs proceeded.

The President proposed, and Dr Craig seconded, that the Society cordially thank Dr Symington for his valuable paper, and for his trouble in bringing the beautiful preparations and drawings illustrating it before them.

Dr Symington acknowledged the compliment.

VI. REPORT OF THE ROYAL MATERNITY AND SIMPSON MEMORIAL HOSPITAL, FOR THE QUARTER ENDING 31ST OCTOBER 1885.

By J. HAIG FERGUSON, M.B., C.M., M.R.C.S., and S. HALE PUCKLE, B.A. Cant., M.B., C.M., Resident Physicians.

DURING the quarter there have been 58 Intern, and 196 Extern cases.

INTERN CASES.

Of the 58 women delivered in the house 30 were primiparæ, and 28 were multiparæ.

The numbers were as follows:—30 i.-paræ, 16 ii.-paræ, 3 iii.-paræ, 4 iv.-paræ, 1 v.-para, 2 vi.-paræ, and 2 x.-paræ.

The average age of the primiparæ was 21·66 years—the oldest being 35, the youngest 15.

The average age of the multiparæ was 27·25 years—the oldest being 40, and the youngest 20 years of age.

There were 58 children born, 32 males and 26 females.

The primiparæ gave birth to 17 males and 13 females.

The multiparæ gave birth to 15 males and 13 females.

There were 6 cases of premature labour, 4 at the seventh month, and 2 at the sixth month of gestation.

Average Duration of Labour.—Primiparæ :—1st stage, 12 hours, 51 minutes, 10 seconds ; 2nd stage, 4 hours, 40 minutes, 51 seconds ; 3rd stage, 18 minutes.

Longest total labour, 54 hours, 45 minutes ; shortest total labour, 4 hours.

Average Duration of Labour.—Multiparæ :—1st stage, 10 hours, 58 minutes, 2·14 seconds ; 2nd stage, 4 hours, 17 minutes, 8·57 seconds ; 3rd stage, 16 minutes, 21·42 seconds.

Longest total labour, 44 hours, 40 minutes ; shortest total labour, 2 hours, 15 minutes.

The labours are classified as follows:—Natural, 29 ; Laborious, 11 ; Laborious and Complex, 1 ; Preternatural, 3 ; Complex, 3 ; Premature, 6 ; Precipitate, 5.

The vertex presented on 55 occasions as follows:—L.O.A., 53 ; R.O.P., 1 ; R.O.A., 1.

Laborious.—There were 4 high forceps and 7 low forceps cases. Of the high forceps cases, the first was for spasmodic rigidity of the os uteri, with great exhaustion on the part of the patient. The second was in the case of a rickety pelvis, in which the conjugate at

the brim measured $3\frac{3}{8}$ inches, and the child was extracted alive. The third was in a young girl of 15 years of age with a pelvis *æquabiliter justo-minor*. In the fourth case, high forceps were applied as soon as the os became dilated fully, in order to prevent the possible recurrence of hæmatoma vulvæ. The patient was admitted at the eighth month of gestation with a large, exceedingly tender hæmatoma of the right labium majus. It was brought on by excessive walking exercise, and under treatment had completely disappeared before labour set in. It did not recur during labour.

Of the low forceps cases—4 were for prolonged 2nd stage with exhaustion, 1 was for recurved sacrum with rigid perinæum, and 2 were for rigidity of the perinæum.

Laborious and Complex.—In this case low forceps were applied for exhaustion on the part of the patient. The placenta, which was adherent, had to be removed under chloroform. The patient had secondary syphilis.

Preternatural.—There were 2 footling cases—one R.S.A. and the other R.S.P. There was one breech, R.S.P.

Complex.—The first was a case of accidental hæmorrhage with albuminuria. The second was a case of prolapsed cord in which high forceps were used to effect delivery, and the third was a case of morbidly adherent placenta removed under chloroform.

Precipitate Labours.—Three occurred in multiparæ (one a street birth), and two occurred in primiparæ.

Mortality.—Maternal, none; fœtal, four; infantile, five.

Of the *Fœtal deaths*, one was born dead at the seventh month (the case of accidental hæmorrhage). The second was the case of prolapsed cord, in which the child died in the first stage of labour. The other two were born decomposed at the sixth month, one of them being syphilitic.

Of the *Infantile deaths*, one died of debility a week after birth. Of two born prematurely at the seventh month, one lived 8 hours in an incubator, and the other only survived 5 days. A fourth died of convulsions and general marasmus a week after birth, and the last died on the third day from melæna neonatorum.

Average Weight of Children.—Primiparæ—female, 6 lbs. 4·3 oz.; heaviest 8 lbs.: male, 6 lbs. 10·58 oz.; heaviest, 8 lbs. 4 oz. Multiparæ—female, 6 lbs. 3·69 oz.; heaviest, 8 lbs. 10 oz.: male, 6 lbs. 7·4 oz.; heaviest, 8 lbs. 4 oz.

Average Length of the Umbilical Cord.—Males, 22·43 in.; females, 21·44 in.—longest, 39 in.; shortest, 10 in.

Three cases of ophthalmia neonatorum occurred during the quarter, which yielded readily to treatment. Credé's prophylactic treatment with a 2 per cent. solution of nitrate of silver was pursued throughout the quarter, and the eyes were also washed in many cases with corrosive sublimate solution, 1 in 2000.

State of Perinæum.—Rupture took place in 6 cases, all of which were primiparæ. All of them were partial ruptures. Carbolized

catgut sutures were used in each case, and the parts afterwards dusted with equal parts of iodoform and bismuth. Every case healed rapidly with the exception of one, which did not close completely in the centre, owing to syphilitic ulceration.

Ergotin was administered hypodermically in every case at the termination of the 2nd stage of labour.

Puerperium.—In 31 cases the temperature never rose higher than 99°; in 18 never above 100°; in 6 never above 101°; in 1 not above 102°; and in 2 cases it did not reach 103°. None of the high temperatures were due to absorption of septic matter. Their causes were trifling, and were in all cases brought about by some mammary, alimentary, or nervous disturbance. Many of the temperatures were subnormal, for which no reason can be assigned.

After the 16th October spa water was administered to all the patients before breakfast.

Antiseptics.—The antiseptic used was a solution of corrosive sublimate, 1 in 1000, which was diluted with an equal part of warm water for the vaginal douches. In all vaginal or uterine examinations, corrosive sublimate in vaseline (2 grs. to ℥i.) was used. The only objection to the use of the corrosive sublimate was its action on instruments, etc., so that when these were required carbolic acid solution (1 in 20), and carbolic oil (1 in 10) were substituted. During the last fortnight of the quarter, carbolic acid solution (1 in 40) was used for the vaginal douches, as it was thought that the corrosive douche was in some degree accountable for the frequent occurrence of subnormal temperatures in the wards. After the change, the temperatures were certainly higher for some time than they were previously, but the variation was so slight that it is certain that some other reason must be looked for to account for the lowered temperatures. During the whole quarter carbolic acid solution (1 in 20) was evaporated over a gas jet in the wards day and night.

The following cases call for special remark :—

CASE I.—Case of accidental hæmorrhage with albuminuria at the seventh month.—Mrs D., age 21, i.-para, admitted 3rd August 1885. Last menstruation, 4th January 1885. Menses, 21 day type, irregular. Patient had been in her usual health till two days previously, when she began to suffer from headache and sickness, was unable for her food, languid and easily tired. She noticed that her feet got a little swollen towards evening, and that she had a puffy look about the face. While lying in bed the previous night she woke suddenly, and found she was saturated with blood, and that a considerable quantity of blood was coming away from the vagina. She had no pain, and the hæmorrhage lasted all day. Her urine had been scanty for several days, and on the day of admission she passed no water at all. Bowels had not been moved for two days.

Condition on Admission.—Legs swollen and œdematous, also the back. Face and lower eyelids puffy. Severe headache and slight vomiting. Pulse not tense. No cardiac murmur. Temperature normal. Severe pains came at irregular intervals, felt both in the front and back. Considerable hæmorrhage, chiefly during the pains, with many clots coming away. The uterus was painful to the touch. Its height was 2½ inches above the umbilicus. Fœtal heart and uterine souffle could be heard. On vaginal examination the cervix was high up and conical in shape. The os admitted the point of the finger. The cervical canal was full of clots. There was no boggy feeling in the lower uterine segment—on the contrary, it felt firm and elastic. The membranes could be felt separated all round from the lower uterine segment. Half an ounce of high-coloured urine was drawn off, and was found to be loaded with albumen and containing blood. After some chloral had been given, a Barnes' bag was introduced into the cervical canal by Dr Croom, and was left in for an hour. On its removal the os had reached the size of a five shilling piece; the clots were all away and the membranes were well down. There was no more hæmorrhage, and labour terminated naturally in about two hours, the child being quite dead. The patient was dry cupped over the loins, and had ℳi. croton oil and a diuretic mixture ordered her. After this the patient felt very much better and had no more headache. The quantity of urine gradually increased from day to day till it reached the normal quantity, and the amount of blood and albumen gradually disappeared. The patient was discharged on 13th August in perfect health.

CASE II.—This was a case of a woman, æt. 40, ii.-para, who, as the result of a former instrumental labour seven years before, suffered from a recto-vaginal fistula communicating with the anus below, and extending upwards for fully an inch. The anus was abnormally distensible and the sphincter was destroyed. The perineal body was gone, and the perinæum was represented by two bands of cicatricial tissue, the anterior of which was very narrow. The patient went into labour on 25th October 1885, and a breech presentation was felt. The pelvic brim was also felt to be slightly contracted. Labour went on naturally till the pelvic floor was reached, when it was seen that owing to the state of the posterior vaginal wall the breech showed no tendency to come forward through the vulva, but was being expelled backwards through the anus. Chloroform was administered, and attempts were made both to push the breech forwards by pressure through the rectum, and also to bring a leg down, but these alike were unsuccessful. Dr Croom was sent for, and under his directions forceps were applied to the breech, pressure forwards at the same time being kept up through the rectum. By this means the child was safely delivered *per vias naturales.* With the exception of the rupture of the thin

anterior cicatricial band in the perinæum, no further laceration occurred, though the lower part of the recto-vaginal septum was exceedingly tense and seemed in imminent danger. The patient made a good recovery.

Extern Cases.

The number of cases reported throughout the quarter was 196; Details as follows:—Primiparæ, 31; multiparæ, 165.

There were 194 children born (5 cases of twins). Of these 89 were male and 105 female.

Labours are classified as follows:—Natural, 156; Laborious, 8; Laborious and Complex, 1; Preternatural, 4; Complex, 12; Premature, 8; Abortions, 7.

Of the vertex presentations the positions were:—L.O.A., 165; R.O.P., 4 (one was persistent); R.O.A., 10; L.O.P., 2.

Of the *Laborious Labours*—5 were for exhaustion and prolonged 2nd stage; 1 was for a large firmly ossified head, and 1 for rigid perinæum. These were all low forceps cases. There was one high forceps case for justo-minor pelvis.

The *Laborious and Complex* case was one in which low forceps were applied for exhaustion. The placenta, which was morbidly adherent, had to be removed under chloroform.

Of the *Preternatural Labours*—2 were breech L.S.A.; 1 was a footling L.S.A.; and 1 was a brow presentation.

Of the *Complex Labours*—5 were cases of twins, which presented as follows:—(1), Footling and breech; (2), both breech; (3), vertex L.O.A. and breech R.S.A.; (4), vertex L.O.A. and breech R.S.P; (5), vertex L.O.A. and breech R.S.A.

6 were cases of adherent placentæ, which were removed under chloroform. In one of these traction had been exercised on the cord by an incompetent midwife, so that it broke at its placental insertion. In *one* case severe epileptic convulsions came on immediately after a normal labour. These were controlled by chloral enemata, and she made a good recovery.

Of the *Premature Labours*—3 were at the sixth month; 4 were at the seventh month; and 1 was at the eighth month.

Of the *Abortions*—1 was at the sixth week; 3 were at the second month; 1 was at the third month; and 2 were at the fourth month.

Mortality.—Maternal, none; fœtal, 14; infantile, 4.

Of the *Fœtal deaths*—7 were the abortions above mentioned; 1 was born dead at full term—the cause probably being the chronic alcoholic state of the mother; 3 were premature at the sixth month; 2 were premature at the seventh month (putrid); and 1 was dead born at the eighth month.

Of the *Infantile deaths.*—1 was an undeveloped twin, which died soon after birth; 1 was very feeble at birth and survived only an hour; 2 were premature at the seventh month, and only survived one day.

The following case of special interest occurred in the extern practice :—Mrs A., iv.-para, age 22, confined on 29th August 1885. There was a previous history of flooding post-partum, and the patient was very anæmic. The student who went to the case, thinking that there was an abnormal presentation, sent to the Maternity for assistance. It was found that the os was dilated to a little over the size of half-a-crown, soft, and easily dilatable, the membranes were unruptured, the brow was presenting, and the head quite movable at the brim of the pelvis. Pressure was applied over the sinciput during the pains, which were strong and frequent. Flexion of the head was thus produced, and the presentation converted into a vertex L.O.A., the child being born without any difficulty. Severe post-partum hæmorrhage succeeded the birth of the child. This was temporarily controlled by compression of the uterus between the two hands, and was effectually stopped by an intrauterine injection of hot water.

MEETING IV.—FEBRUARY 10, 1886.

Dr J. HALLIDAY CROOM, *President, in the Chair.*

ON the motion of the President, seconded by Professor Simpson, it was resolved to adjourn the meeting for a fortnight, as a mark of respect to the memory of Dr Angus Macdonald, whose death occurred that morning.

MEETING IV. ADJOURNED.—FEBRUARY 24, 1886.

Dr J. HALLIDAY CROOM, *President, in the Chair.*

I. *The President* read the following OBITUARY NOTICE of the late Dr Angus Macdonald :—

I could have wished that the sad task of speaking of him whose death to us all here is an irreparable loss had fallen to one of you able, I will not say better to appreciate, but certainly more fitly to express the highest esteem and honour in which Dr Angus Macdonald was held by us.

As through your kindness for the time being President of the Obstetrical Society, it is my duty to place in your name " a minute with regard to the late Dr Angus Macdonald," and it is to me a matter of no little solemnity that I should be called to speak of him to you in these circumstances. His name is associated in my

mind with memories entirely personal, and which, even could I express in words, I could scarcely expect any of you fully to appreciate; and for this reason, that the family of which through marriage he became a member is associated in my mind with all thoughts of old home days. Indeed, I believe that a somewhat similar task fell to my father in a former generation which falls to me now. I perform it with the same diffidence, and as myself being compelled thus sternly to realize the flight of time, I hope with the same solemnity.

Here and now we may not speak of Dr Macdonald in any relation than that which he bore to the profession, of which he was a most distinguished member, and to this Society, which was so honoured by having his name on the roll-list of its active members and former Presidents.

What he was to his family they alone know. The irreparable loss —the much he might have been to them—they can but the more keenly know as the years roll on. With them I will ask you, through our Secretaries, to express our deepest sympathy and distress. Into their sorrow we may not intrude.

" The heart knoweth its own bitterness," and

> " By the hearth the children sit,   .   .   .
> They see the vacant chair, and think
> How good, how kind, and he is gone ! "

You will allow me, in those classic words, to express for his widow what I am sure is the wish of you all :—

> " May all love—his love unseen, but felt—o'ershadow thee ;
> The love of all thy sons encompass thee ;
> The love of all thy daughters cherish thee,
> Till God's love set thee at his side again."

What the famous Berlioz said of his Leipsic physician we may more truly say of Dr Macdonald as a practitioner and a colleague, " Inter doctos clarus sed patientibus carus." To his patients he was universally kind, considerate, and attentive—interesting himself, I have the best reason to believe, personally, permanently, and practically, in each case. Many will miss in him one who lightened their suffering not more by his skill than his friendly kindness. Among the members of the profession he was essentially *clarus*, as, indeed, he was in his whole career. I need not call to mind the prominent place he took in a sister University and a sister branch of science amid many difficulties, which to other less morally robust natures would have been insuperable. His extensive general knowledge, his wide sympathies and strong convictions, were built on a basis of broad culture falling to the lot of few in our profession. Thus was he in judgment without that narrowness and onesidedness which is too apt to result from a devotion, however laudable and even necessary, to one branch of study.

As an obstetric author his reputation will rest mainly on his important published study *On the Relation of Chronic Heart Disease to Pregnancy and Parturition*. Originally communicated in separate papers to the Society, it is a typical example of the hard, heavy, thorough work Dr Macdonald was able to do; and as a Society of Edinburgh men we have good reason to be proud of it. I need scarcely stop here to enumerate the various contributions he made to this Society. They were as numerous as they were varied, and are fresh in the minds of most of us. They were one and all the result of patient, thorough research,—of that keen, critical, and analytic faculty which in so large a measure was characteristic of Dr Macdonald's mind.

As a consultant in obstetric cases, he enjoyed in an eminent degree the confidence of his professional brethren, for he brought to them a mind mature in thought and rich in experience. How much his opinion was valued and relied on will be felt keenly by those men wont to seek his willing and able help in all emergencies.

As a gynæcologist, while he was pre-eminent in every department, perhaps for us here the most striking feature in his career, and one full of lessons and encouragement for most of us, was the extraordinary perseverance he showed in training himself as an operator. Recognising, as he did, on his appointment to the Infirmary the place which abdominal section was destined to occupy in gynæcology, he formed the laudable ambition to excel in this work. Comparatively untrained in surgery, with at first somewhat awkward methods and little resource, he doggedly applied himself to master the details of the work, and he did it with marked success. In his later years he showed himself an expert operator, undertaking many of the most grave and difficult cases with brilliant success. To those of us, like myself, who had seen him at the commencement and at the end of his operative work, nothing could be more wonderful than the large and steady development of his facility in operation, and the pluck and determination which he showed in dealing with the most severe and unexpectedly complicated operations. The records of this Society, and of the *Edinburgh Medical Journal*, bear ample testimony not only to his ability but to his continuous success. It is not for me to refer to his statistics. They are not in my possession. This I do know, that when they are published they will show a record of which our Society and our School may well be proud.

Many students will look back with gratitude to the impulse they received from him as a teacher; nor will they forget the lessons of thorough work and accurate diagnosis which he imparted. They will never cease to be grateful for the constant trouble he took with them, and the many acts of unostentatious kindness they received at his hands.

By his death we mourn the loss of a large-minded citizen, an earnest teacher, a distinguished physician. Students, professional brethren, and patients, will feel it alike, but nowhere will it be more or more really felt than in this Society.

For years, by constant attendance, active work, and heartfelt sympathy, Dr Macdonald has been a pillar to our Society. Successively Vice-President and President, he has adorned its highest offices. His great name, the basis of long and wide experience, the penetrating and unerring insight on which it rested, have added at once to its reputation and to the permanent and grateful gain of its Fellows.

We shall miss at our table his grave earnest face, his shrewd sober counsel, his thoughtful and kindly criticism, while our Transactions will be the poorer that his able pen no longer contributes to them.

It is for you and for me, gentlemen, for what of our lives yet remain, to take to heart the lessons of his laborious and well spent life. We may receive from it a fresh stimulus by seeing what conquests may be made through steady, enduring, and unremitting toil. For him there was no day without its line, none in which he did not acquire or try to acquire some new fact or some new light; and thus it was, through hard work and devotion to duty, which are three parts of genius, he rose surely from comparative obscurity, pushed his way through obstacles which only his strong moral courage and indomitable perseverance could have surmounted, and reached that most eminent position amongst his professional brethren and amongst the general public which he occupied at the time of his death.

Of his religious convictions, which were both strong and deep, it is no part of my duty here to speak, except thus far, that they were manifested—and how better could they show their intense reality?—in stern devotion to the work of his life. They enabled him, though cut off in the midst of his days, to finish—no doubt imperfectly, as everything human must be imperfect, but as only very few can claim to have finished—the work given him to do.

———

It was resolved to send a copy of the President's notice to Mrs Macdonald.

II. *Professor Simpson* showed the HEAD AND CORD of a child born in precipitate labour.

III. ON SOME OF THE PHYSIOLOGICAL AND THERA-
PEUTIC EFFECTS OF WATER AT DIFFERENT TEMPERA-
TURES, WITH SPECIAL REFERENCE TO OBSTETRIC AND
GYNÆCOLOGICAL PRACTICE.

By R. MILNE MURRAY, M.A., M.B., M.R.C.P.E., Physician for Diseases of
Women, Western Dispensary, etc.

THE great change which the introduction of the use of water at
high temperatures has effected in the treatment of certain gynæ-
cological and obstetrical complications, is one of extreme import-
ance. If we are to judge of its efficiency by the accounts given of
it by those who have made practical application of it, we are
bound to admit that it is destined to revolutionize the treatment
of inflammations and hæmorrhages in other parts of the body than
the pelvis.

For a long period the efficiency of cold applications in the
checking of hæmorrhage, under certain conditions, has been known
and practised. For centuries, in the case of post-partum hæmor-
rhage, for example, cold cloths to the abdomen, cold water and ice
in the vagina, etc., have been regarded as routine practice, and
their employment has been followed by undoubted relief of the
symptoms in thousands of cases.

It is, on the other hand, within but very recent years that the
use of water at, relatively speaking, high temperatures — at a
temperature higher by 10° to 20° F. than that of the normal blood
—has come to be recommended for the treatment of the same
condition, and the experience of those who have employed it
largely would go to show that its advantages far outweigh those
of water at the lower temperatures.

The evidence of this greater efficiency of warm over cold water
in controlling uterine hæmorrhage is based almost entirely on
clinical evidence. The effect is supposed to be a twofold one,
namely, upon the uterine muscle itself, and upon the bloodvessels,
causing, that is to say, rigid tonus of the uterus, and more or less
persistent spasm of the muscular tissue of the other. The fact
that a stream of hot water, directed on the bleeding surface during
an operation for vesico-vaginal fistula, or for repair of the perineum,
at once arrests hæmorrhage, goes far to prove the second supposi-
tion; and the fact of the former is not difficult to demonstrate in
a flabby and relaxed uterus after the third stage. Indeed, con-
sidering the intimate histological and physiological relations of
the middle coats of the uterus and of bloodvessels, it is not
difficult to suppose that a physical agent which affects the one
must, in some degree at any rate, affect the other also.

Nevertheless, in spite of this more or less definite attempt at an
explanation of its action, and the enthusiasm of many of those

who have given it a trial, it is not a matter for surprise that in so
dire an emergency as post-partum hæmorrhage, obstetricians
should hesitate to abandon methods they have been taught and
have practised, for one which seems indeed their very antithesis.

While cold has been universally admitted as the great agent
for causing spasm of bloodvessels and of allaying hæmorrhage,
warmth, on the other hand, has been as widely credited with the
opposite effect, that of the dilation of vessels and promotion of
hæmorrhage. The effect of a bath of tepid water on an incised
and bleeding wound is familiar to all. That warmth could, on
the other hand, check bleeding seemed naturally but a paradox.
Nor have the attempts which have been made to explain the
astringent effect by the votaries of heat been by any means
convincing.

Dr Emmett, whose name more than that of any other is
associated with the advocacy of the use of hot water, in
explaining the action of heat on the peripheral circulation,
writes as follows : — " Heat, unless at a temperature which
would destroy the parts, does not act as promptly in causing
this contraction (of bloodvessels) as either electricity or cold. In
fact, its immediate effect is to cause relaxation, and to increase
the congestion of the parts ; but if its application be prolonged,
reaction ensues, and contraction takes place—in other words, the
reaction from heat is contraction. The capillaries are excited to
increased action, and as they contract from the stimulus of their
nerves, the tonic effect extends to the coats of the larger vessels,
their calibre in turn becomes lessened, and with this approach to
healthy action their congestion is diminished. The popular
belief is that heat relaxes and increases the congestion of parts,
and such indeed is the case at first. But a hot poultice is never
applied with the object of increasing the congestion, but as any
' old wife ' would express it, to draw the ' fire ' or inflammation
out—in other words, it lessens the congestion by stimulating the
bloodvessels to contract. . . . . The immediate effect of cold,
therefore, is contraction, and with reaction comes dilatation ; but
the reverse is true of heat, which causes at first dilatation,
followed, however, by contraction."

This extract is a striking instance of an attempt to square a pre-
conceived idea with an observed fact. The author has held for years
that warmth is a promoter of hæmorrhage and a dilator of small
bloodvessels, but he has recently found that warm water is efficient in
contracting bloodvessels and controlling hæmorrhage. He attempts
to reconcile this apparent contradiction by affirming that the first
effect is dilation, but the after-effect is contraction. I do not here
stop to discuss the various physiological statements made in this
extract, but would merely remark that it is but a sorry recom-
mendation of hot water as a uterine hæmostatic to an accoucheur
struggling with a case of post-partum hæmorrhage, to say, " Inject

—

warm water into the uterus. It will certainly increase the hæmorrhage at first, but if you go on long enough, the bleeding is bound to stop when the reaction sets in!"

Emmett is not singular in the failure of his attempts to explain the action of this agent, and it is well that others have paid less attention to the explanations given of its action than to the reality and efficiency of the action itself.

I have recently been engaged in investigating the action of stimuli of various sorts on the muscular tissue of the uterus, as well as non-striped muscle generally, and as the results bear in a very direct way upon the effect of heat and cold in controlling hæmorrhage and promoting muscular contraction, they have seemed to me of sufficient interest to warrant me laying them before the Society to-night.

I divide my paper into two parts. In the first I consider "The physiological effect of thermal stimuli when applied directly to muscular and vascular tissues;" and in the second I purpose making some deductions of therapeutic and practical interest from the results of these observations.

I. The Physiological Effect of Thermal Stimuli on Non-striped Muscular Tissue.

The heat was applied by means of water, and for convenience I shall divide the temperatures experimented on into three divisions—

    a. Cold, from 32° F. to 60° F.
    b. Intermediate, from 60° F. to 100° F.
    c. Hot, from 100° F. to 120° F.

Mode of Experiment.—The experiments have been conducted on the uterus of rabbits both pregnant and non-pregnant. I have at previous meetings of the Society shown and described the mode of recording the observations and some of the tracings obtained, but for the sake of those Fellows here who may not have been present then, I may briefly recapitulate my description.

The animal being fully anæsthetised and secured, the abdomen is opened in the middle line from 1½ inches above the pubis down to that bone. The bladder, which is generally found to be distended, is emptied by pressure and pushed aside, and the vaginal tube or uterine cornu, as desired, is gently withdrawn from the abdomen. Supposing the uterine horn is to be made the subject of experiments, it is carefully raised from the incision, and adjusted at or near the vaginal end between the jaws of a gilt clamp, *b,* the latter being held firmly on an arm sliding on a rigid support. The clamp is compressed sufficiently to prevent the horn slipping out, but not so as to damage the tissues. When the vagina is to be observed it is raised in a similar manner, but care is taken to

arrange the vessels which run along the anterior and posterior aspects of it, so that they lie in the space between the jaws, and
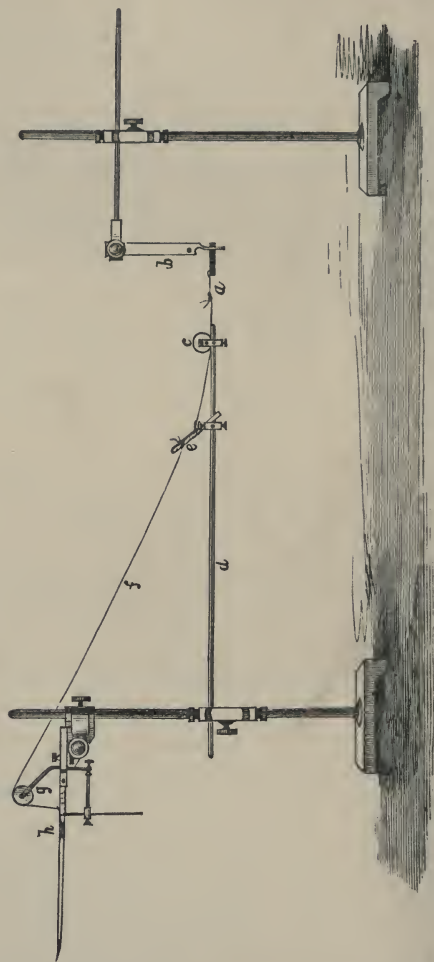
are not compressed by them. To the further end of the horn or vagina, as the case may be, a fine steel hook, *a*, is passed into the tissue. From this hook a silk thread passes under a pulley, *c*, on the horizontal rod, *d*, and then to a short lever, *e*, moving in a vertical plane. From this lever a second thread, *f*, passes over another pulley to the lever, *h*, which writes on the drum. It will be seen from this arrangement that any shortening of the segment held between the clamp and the hook will draw upon the latter and so elevate the writing lever, and so long as the parts remain as

adjusted, the various movements of the lever will represent a proportional shortening of the segment under observation.

With an arrangement such as this the finest movements of the uterine muscle in a longitudinal direction are recorded with accuracy. Slight contractions, which will certainly escape the eye of even a trained observer, are demonstrated by the lever, and the perfectly comparative value of the different tracings in a given experiment is not its least recommendation.

The tracing may be taken on smoked or continuous paper. As the drum must move very slowly, the former is the most convenient method, though for any long observation the latter may have its advantages.

When the vagina or uterine horn of a rabbit is arranged as described, evidence is invariably afforded of the existence of regular contractions of the muscular wall, and resulting in rhythmic shortening of the tube. It will be found that the lever describes a series of up and down movements, representing regular contractions and relaxations of the portion of muscular tissue under observation. The rate at which this movement occurs is somewhat variable in different individuals. In young animals it is more rapid than in full-grown individuals.

I show first a tracing, Plate I., Fig. 1, which shows the movement obtained from the vagina of a half-grown animal, in which the rate is at about one contraction in 35 seconds.

In Fig. 2, obtained from the vagina of a full-grown animal, the contractions occur at the rate of one in 115 seconds, as seen in the upper line.

In Fig. 3 A, also from an adult, the movement is at the rate of one in 180 seconds. On an average the rate in the adult may be stated as one in 120 seconds.

In the uterine horn the movements are less extensive than in the vagina, but occur at the same rate, and are always perfectly obvious. They present an important difference in certain respects which I shall have occasion to refer to later on.

The movement as observed by the eye is a distinct peristaltic one. In the vagina, where it is best seen, the contraction begins at the clamp, the tube gradually shortens, while a circular bulging and constriction travels slowly along, the tissue of the segment becoming pale and bloodless.

The movement, if uninterfered with, will go on for hours, its rhythm and extent undergoing little or no change. I have observed it repeatedly for six hours, in one case for nine. It, moreover, continues for a variable period after death, from 30 to 65 minutes. It can be abolished by deep chloroform anæsthesia, but not readily by ether.

The elements going to make up the curves obtained are a matter of some interest, not only on account of the remarkable persistence of their features in different tracings, but also in the case of those

obtained from the vagina, on account of the striking resemblance
which their component parts bear, at first sight at least, to those
obtained from simple contractions of striped muscle.

On examining any of the tracings obtained from the vagina,
Figs. 1, 2, or 3, Plate I., it will be seen that each curve consists of
three well-defined parts—

            1. A period of contraction.
            2.   „   of quick relaxation.
            3.   „   of slow relaxation.

These are particularly distinct in Fig. 3.

The invariable occurrence of these three phases in any curve of
contraction shown is worthy of notice. But we must beware of
pressing the analogy between the contractions of such an organ as
the vagina and that of a portion of striped muscle such as the
gastrocnemius of the frog. In this case we are dealing with a tube
whose walls are made up of a more or less complex arrangement
of non-striped muscular bundles. In the other, we are dealing
with a simple muscular element. However interesting may be
the fact that the two curves are similar, we are not at liberty to
conclude that the mode of action of striped and non-striped muscle
is identical. I direct attention to this feature of these records at
present in order to enable me the better to point out the more
clearly how these movements become modified by the agencies I am
about to discuss. A knowledge of the existence and features of these
contractions will enable me further to explain what would other-
wise seem discrepancies in the result of some of my observations.
The question, however, naturally arises here—" Are these rhythmic
contractions constantly present in the uninjured vagina and uterus
of rabbits, or are they called forth by the operation necessary for
their observation, or by the cold air and other influences to which
the organ is exposed ?"

I have not time at present to enter into a consideration of this
question with the detail it demands (nor is it essential for my present
purpose), but I beg to submit the following points in support of
the view which I hold, that these rhythmic contractions are not the
result of adventitious stimuli, but that the whole uterine apparatus
of rabbits, and presumably of other animals as well, is the seat of
regular rhythmic contractions, independent altogether of pregnancy.

1. The contractions present the same characters in all the animals
observed, and in the same individual continue for hours, without
any noticeable variation of rate or extent.

2. Variations in temperature of the surrounding atmosphere, and
variations in the amount of stretching or compression within wide
limits, have no effect on the rate or extent.

3. The contractions continue for many hours where the uterus is
returned to the abdomen immediately after the attachment of the
hook, and their character is quite similar to those obtained from
an exposed uterus.

4. Contractions induced by direct stimuli, thermal and other, differ entirely in many of their features from the natural ones.

5. In this connexion an experiment, which I was enabled to make, by the kindness of Dr Croom, in the Maternity Hospital last autumn, has a special interest.

A Barnes' bag containing water, but not distended by it, was introduced into the vagina of a pregnant primipara, and the tube attached to a water manometer. Fig. 4, Plate I., shows the result, and gives evidence of a distinct and rhythmic rise and fall of pressure in the vagina.

From these and other considerations I am of opinion that these contractions, representing a regular peristalsis of the whole muscular wall of the uterus and vagina, exist independently of all external stimuli. They are, apparently, examples of automatic action, and are most probably concerned with the nutrition of the muscular apparatus.[1]

I have now to consider the results obtained by the application of water at different temperatures to such a portion of uterus or vagina as I have described.

In order to eliminate the effect of the water itself apart from its thermal condition, I made some preliminary observations with pure water at temperatures from 90° to 100° F. It is well known that striped muscle is thrown into a state of rigidity by being immersed in pure water, the condition being known as "water-rigor." Pure water, however, at temperatures varying between 100° F. and 90° F., has no such effect on non-striped muscle. Water at such temperatures, and, indeed, as low as 65° F., produces in some cases no appreciable effect; in others, it seems to diminish the extent of the rhythmic contraction, while having little if any effect on the rate. Nothing of the nature of a prolongation of the contraction was in any way noticeable.

In order to obtain reliable comparative results as to the effects of various temperatures, the water was applied in a definite quantity, as far as possible immediately after the disappearance of one of the rhythmic contractions. In this way the error, arising from the effect being complicated by the occurrence of the natural rhythm, was excluded to a great extent. The fact that the muscle was at the moment of stimulation presumably in a state of partial exhaustion—the result of the preceding contraction— does not vitiate the comparative value of the results. On the contrary, it enhances their interest from a practical point of view, in showing how far the efficacy of the artificial stimuli may be independent of the potential state of the organ for the moment.

The water was applied to the portion of muscle under experiment by means of a glass pipette of 5 c.c. capacity. The pipette was,

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[1] These movements have been observed and described by Jastreboff, Dembo, v. Basch and Hofmann, and others, but have not, so far as I am aware, been previously recorded in this fashion.

first of all, immersed in water of the temperature to be employed, then filled, and allowed to discharge on the portion of muscle between the hook and clamp (see woodcut). In the earlier experiments the moment of contact of the water and tissue was marked on the drum by an assistant; in the later ones the whole period of application was recorded by means of an electric signal, whose indications are obvious in the tracings.

In describing the effects I shall keep those upon the muscular tissue separate from those on the vascular apparatus, treating of the former first.

A. *Effects of direct application of Water at 60° F. and under to Non-striped Muscle.*

The results of such an application will be most satisfactorily considered under the following divisions :—

1. The duration of the latent period, *i.e.*, the length of time elapsing between the first contact of water and the first indication of effect.

2. The modification which such effect produces on the elements of a rhythmic contraction.

a. Its period of contraction.

b. Its period of quick relaxation.

c. Its period of slow relaxation.

I shall describe, first, a typical experiment with water taken directly from the tap, the temperature being 42°. The upper line A, Fig. 1, Plate II., shows the result of such an experiment. The X shows the moment of application of the water. It is followed—(1.) By a latent period extending to 30 seconds ; (2.) This is succeeded by a period of contraction occupying 25 seconds. On comparing this curve with any of those of the normal contractions already shown, it will be seen that this differs entirely on account of the absence of the quick upstroke [1]—in other words, the contraction takes place slowly ; (3.) So soon as the contraction reaches its maximum, it will be seen that the curve slowly begins to return to the abscissa. There is no prolongation of the maximal tonus. In this it agrees with the normal curves. But it differs in this important respect, in so far that there is no period of quick relaxation, which I pointed out was a characteristic feature of the normal curves. On the contrary, the curve slowly returns to the abscissa, taking 3 minutes 15 seconds to reach it.

Fig. 2, Plate II., shows the characteristic features distinctly. The first part of the tracing shows the normal rhythm extremely well, the sharp upstroke of the contraction, the quick relaxation period,

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[1] The tracings Figs. 1 and 2, Plate I., and Fig 1, Plate II., were obtained by an arrangement in which the thread was attached below the lever, the latter being held up by means of a fine elastic thread. The contraction of the muscle thus produces a *downstroke*, but its meaning is obvious. The arrangement figured in the cut was found more satisfactory, and was adopted for all the other experiments.

and the slow after action. The drum was stopped after two contractions for 2 minutes, and the water at 5° C. = 41° F. applied after starting it again. On this occasion it happened to touch the tissue at the moment when another natural movement was commencing. Consequently the latent period is abolished, and it will be seen that the first part of the curve corresponds in rate and character to that of the two preceding waves. At the horizontal line the slow developing contraction, due to the cold water, manifests itself. It reaches a maximum in 2 minutes 12 seconds, and the abscissa is reached in 7 minutes 35 seconds afterwards.[1]

I need not stay to describe more of these in detail.

The features, then, of a single application of cold water under 50° F. to the exposed uterine horn or vagina are as follows :—

1. A latent period of from 40 to 90 seconds.

2. A period of contraction, occupying 1 to 5 minutes in reaching a maximum.

3. A period of relaxation ranging from 3 (nearly) to 15 minutes, generally, indeed, occupying three times the time of the contraction.

Such a series of phenomena has been practically constant in my experience, gathered from a large number of experiments. The only instances in which the latent period has been markedly diminished have been those in which the application of the stimulus coincided with the initiation of a natural rhythmic contraction. Water, which has been cooled by means of ice to 33° or 34° F., produced an almost identical effect. The latent period is reduced to 40 seconds in some, but not in all, cases, and in one or two instances the contraction has been slightly more rapid, but in these cases the period of relaxation has been proportionately shortened.

On the other hand, water between 50° and 60° F. differs in its action only in degree. 1st, There is a lengthening of the latent period; 2nd, The same slow contraction, which is of less extent and shorter duration than with the lower temperatures; 3rd, A relaxation period, which is of the same character as that described, but is proportionately shortened. This much for single applications of water at low temperatures.

Let me now consider the effect of repeated applications of such a stimulus. This is shown in Plate III. The upper lines in these

[1] It is necessary to explain that, owing to the duration of the contractions produced by these stimuli, the drum frequently completed its revolution before the lever had returned to the abscissa. The duration of the contraction after the revolution of the drum was noted by the following device. At the moment when the drum had completed its revolution, a platinum tongue carried by the drum completed an electric circuit by touching the surface of a mercury cup underneath. The current actuated an electro-magnet, which started a chronoscope capable of recording one-fifth second. At the moment when the contraction disappeared and the lever returned to the abscissa the chronoscope was stopped, and the duration recorded added on to the tracing.

represent a series of consecutive experiments. Each experiment was made at an interval of 25 minutes after its predecessor, so as to enable recovery to take place. The result of this treatment is sufficiently obvious from a glance at the four tracings, and they are stated with clearness in the following table:—

TABLE I.

Effect of Successive Applications of Cold Water.

No.	Temp. of Water.	Latent Period.	Contraction Period.	Relaxation Period.	Maximum Rise.
I.	44° F.	37 secs.	3 m. 20 secs.	4 m. 36 secs.	1·4 in.
II.	46° F.	1 m. 30 secs.	2 m. 50 secs.	5 m. 5 secs.	1·1 in.
III.	36° F.	15 secs.	40 secs.	58 secs.	·3 in.
IV.	36° F.	20 secs.	3 m. 4 secs.	2 m.	·7 in.

From these tracings and the above table, it would seem that repeated application of cold water rapidly exhausted the excitability of the uterine muscle. While the first application gives us a rise of 1·4 inch, and the last gives only ·7 inch, and the second last ·3 inch. On the other hand, the latent period becomes reduced, while the period of relaxation becomes very much abbreviated, from 5 m. 5 secs. in II. to 58 secs. in III.

The efficiency of the contraction is thus vastly diminished. The *exhaustion of the contractility of the muscle by cold water* is completely borne out in all my experiments. However efficient the first contraction may seem to be, it invariably has happened that the succeeding ones become weaker, until barely any response follows the application of the stimulus. Still further, these tracings were taken, as I have said, at intervals of 25 minutes, so that the muscle had time to recover so far as it could from its previous exhaustion. If, on the contrary, the water be applied within a few minutes after the disappearance of previous effect, only the smallest possible movement is obtained, scarcely sufficient, indeed, to produce any rise of the lever. Again, should water be applied at the time the contraction is at its maximum, this does not in any way retard the development of the relaxation, which goes on as if nothing had been done. In order to reproduce a definite contraction by means of cold water, it is absolutely essential that a distinct period of rest intervene between one application and the other.

B. *Effects of direct application of Water at Temperatures above 100° F.*—When water at temperatures over 100° F. is directed upon a similar portion of uterine tissue, a very different effect is produced, and the curve assumes an entirely different character.

B exhibits in the second line, Fig. 1, Plate II., the characteristic features of this curve.

The experiment was made about 10 minutes after the conclusion of that with cold water, already described, marked A. Water at 115° F. was applied in same amount at ✕, and it will be noticed that there is practically no latent period, the lever leaves the abscissa at once. Moreover, it descends rapidly during the greater part of its course, and ultimately shows an ordinate much greater than was produced by the cold water just above it. The period of relaxation follows in the usual way. But the tracing looks shorter than it should do; the drum accidentally stopped, as will be seen by the markings of the chronograph at the points indicated by the †. The difference between the characters of the two curves, in so far as their latent period and contraction period are concerned, is sufficiently obvious.

Fig. 3, Plate I., presents in its second line what is the typical action of water at 115° F.

The upper line shows the normal rhythm. In the second line, at the point marked by the rise of the signal, 5 c.c. of water at 115° F. were applied. A natural contraction is just being completed, and there seems a slight delay in the response; but long before the whole of the water has been applied a sharp ascent is being described by the lever going straight to its maximal position in 25 seconds. The period of relaxation then sets in, and continues for 12 minutes. It will be seen that the descent is broken up by a series of secondary waves, which seem to represent the natural rhythm superadded to the tonus induced by the hot water.

Such a record renders obvious at a glance the great difference between the efficiency of hot and cold agents in producing contraction in the muscle. I would draw special attention to the almost total abolition of the latent period, to the rapidity with which the contraction develops and attains its maximum, and to the long duration of the relaxation period—in a word, to the marked advantage which hot over cold stimuli have in the rapidity and duration of their effects.

But this advantage becomes much more striking when we investigate the effects of *repeated* applications of hot water to the same muscle in inducing contraction.

Let me ask your attention again to the tracings on Plate III., already shown to illustrate the action of repeated application of cold water.

The lower line in these tracings shows the effects of four successive applications of hot water to the same portion of muscle, experimented on with the cold water and already described.

Water at 115° in the first three and 100° F. in the fourth was applied, as indicated by the signal, and the results speak for themselves.

It will be seen (1) that the latent period is abolished, (2) that the maximal contraction is attained with great rapidity, and that the relaxation is slow and gradual.

The results are shown in the following table :—

TABLE II.

Effect of Successive Applications of Hot Water.

No.	Tempera-ture.	Latent Period.	Contraction Period.	Relaxation Period.		Maximum Contraction.
				Min.	Sec.	
I.	115° F.	1 sec.	35 secs.	6	36	1·9 in.
II.	115° F.	4 secs.	34 secs.	9	45	2·9 in.
III.	115° F.	2 secs.	36 secs.	11	20	2·3 in.
IV.	110° F.	4 secs.	1·40 secs.[1]	15	14	3·2 in.

Comparing this with Table I., it will be seen that the latent period has almost reached the vanishing point. In the next place the contraction period remains almost perfectly constant (the peculiarity of IV. being explained by the tracing). But, on the other hand, whereas Table I. shows a great shortening of the period of relaxation, the experiments of Table II. show an enormous lengthening, *i.e.*, a great prolongation of the tonus; while, lastly, each successive application results in a notable increase in the maximal effect produced, 1·9 inches in I., to 3·2 inches in IV.

I can perhaps make the contrast between the mechanical equivalent of cold and hot stimuli more apparent by the following method :—

Multiply the figures representing the period of relaxation with the figures representing the maximal contraction in the first and fourth experiments in each Table. The products will indicate, 1st, the relative efficiency of the two stimuli in inducing contraction; and, 2nd, the alteration which that initial efficiency undergoes by successive repetitions of the stimuli. Thus in

Table I. $\begin{cases} \text{Experiment I.} & = 6\cdot104. \\ \text{Experiment IV.} & = 1\cdot4. \end{cases}$

Table II. $\begin{cases} \text{Experiment I.} & = 12\cdot084. \\ \text{Experiment IV.} & = 48\cdot448. \end{cases}$

Thus it comes out that while the initial efficiency of cold and hot stimuli vary as 1 to 2, the efficiency of cold stimuli *diminishes* in four experiments from 6 to 1·4 (nearly to $\frac{1}{5}$), while the efficiency of hot stimuli in the same number of experiments *increases* from 12 to 48·5, more than four times. Nothing which I

[1] In IV., chief part of contraction occurring in 24 secs.

can conceive could make the contrast more apparent. I have made a large number of observations with water at temperatures varying from 100° F. to 130° F. in order to determine the most effective temperature. The results show that temperatures under 110° F. produce a smaller maximal contraction, while temperatures over 120° F. often give sudden descents in the relaxation period. I conclude, then, that the most efficient temperature lies between 110° and 120° F.

In speaking of the action of cold water, I pointed out that repeated applications of cold failed to produce a reproduction of the contraction until a period of rest had first of all intervened. The action of warm water, again, presents a contrast to that of cold in this respect. If a second application of hot water be made to the portion of muscle undergoing relaxation, it will at once respond, and contraction will immediately ensue, and this can be repeated indefinitely. If, on the other hand, a continued stream of warm water be applied, the tracing does not indicate a perfect tonus, but the lever traces a curve, keeping high above the abscissa, but broken up by a series of waves showing commencing relaxation cut short in their development.

I shall, perhaps, render more intelligible what I have now attempted to describe as the characteristic features of the action of water at different temperatures on the uterine tissue if I place the special points in their action side by side in parallel columns.

TABLE III.

General View of the Action of Cold and Hot Water.

Cold, 32° to 60°.	*Hot*, 110° to 120°.
1. Marked latent period.	1. Latent period absent or very short.
2. Contraction develops slowly.	2. Contraction develops rapidly.
3. Relaxation about three times duration of contraction.	3. Relaxation about 12 to 24 times duration of contraction.
4. Successive applications can only induce contraction after period of rest. These contractions become greatly diminished in efficiency, the period of relaxation and maximal contraction being greatly reduced. *Loss in four experiments*, ¾ths of initial efficiency.	4. Successive applications followed at once by response. Efficiency of contraction greatly increased. The period of relaxation and maximal contraction are much increased. *Gain in four experiments*, FOUR TIMES initial efficiency.
6. Continuous application produces rapid exhaustion, muscle becoming completely relaxed, and failing to respond.	5. Continuous application induces a high degree of contraction, broken up by secondary waves of partial relaxation and contraction.

ACTION OF COLD AND HOT WATER ON VASCULAR TISSUE.

Time will not permit me to go fully into a consideration of the changes which the application of these stimuli to blood-

vessels will have on the flow of blood through them, and consequently on the vascularity of the parts supplied by them; I shall, accordingly, endeavour to record as briefly as I can the results of two or three experiments, which will, I trust, serve to throw some light on this question.

To begin with, it is perfectly easy to see that whenever either cold water 50° F. to 32° F., or hot water 110° F. to 120° F., is applied to a portion of the uterus such as we have been considering, the vascularity of the tissue becomes manifestly altered, the colour changes, the redness disappears, and a pale cream colour takes its place. Moreover, if the rise of the lever of the recording apparatus is kept in view, at the same moment it will be found that the blanching is most marked when the lever is at its highest point—in other words, the development of the anæmia is coincident with the muscular contraction of the organ. Not the remotest evidence is afforded of Emmet's statement, that hot water always induces relaxation first and contraction afterwards. Water at 110° F. and upwards invariably induces contraction from the very first, and that much more rapidly than cold water does. Emmet's mistake has arisen, as I have said, from an attempt to harmonize his ideas that all warm water induces dilatation with his observation that some warm water sometimes induces spasm.

It is certain that water from 70° F. to 103° or 105° will invariably dilate bloodvessels and promote the flow from open ones, but it is equally certain that water of temperatures from 110° to 120° will have just the opposite effect. His reasoning is faulty, and his conclusion wrong in making " some warm water " include " all warm water."

The two following experiments will bring out the correctness of this view, and are, I trust, sufficiently conclusive.

Experiment 1.—The whole uterus and vagina of a full grown doe were raised out of the abdominal incision. The extremities of the horns were supported in a vertical position by two hooks, in such a way as to expose the web-like and highly vascular expansion of the mesometrium, which stretches from the vagina to the cornua on either side.

Two glass jets, one discharging water at 40° F., the other discharging water at 115° F., were directed each on one side of the expansion. The stream was continued for four minutes. Soon after the commencement of the stream both sides became pale— almost white—and nothing was to be seen save two or three arterial twigs, which were evidently distended to their utmost by the spasm of the arterioles. At the end of four minutes the side receiving the cold water showed signs of returning vascularity, that receiving the hot was still perfectly anæmic. Four minutes later the cold side was bright red, the hot side was still white. Eight minutes after the cold side was an intense scarlet, the bloodvessels standing out in spiral lines all over the tissue, while

the hot side had assumed the appearance it had before the experiment. Half-an-hour later the conditions were the same, and the observation was not continued longer.

This showed clearly that while contraction followed at once in both cases, the contraction induced by the cold water was followed by intense reaction, while the vessels constricted by hot water regained their ordinary tone slowly, and without reactionary congestion.

Experiment 2.—The segment of a pregnant uterus was incised, and the edges of the wound caught by a pair of hooks so as to hold them apart, and permit bleeding to occur. The blood escaped freely.

A small stream of water at 123° F. was allowed to flow on the wound, when the bleeding immediately ceased. Cold water was gradually added to the vessel containing the water, and the temperature slowly fell to 100° F. About one minute afterwards the bleeding recommenced, at first slowly, but as the temperature fell to 90° the blood escaped more rapidly. During the five or six minutes which were necessary to reduce the temperature to 50° F. the blood continued to flow as before. When 46° F. was reached the escape of blood became markedly less, and a piece of ice being added the temperature rapidly fell to 38° F., and then to 36° F., when the bleeding entirely ceased, the water running off colourless. In about two minutes thereafter, the stream of water still being kept up, the oozing again commenced. A morsel of ice laid on the wound was quickly dissolved, and washed away in the escaping blood, and it was evident that the cold had lost its influence. A sponge was dipped in water just hot enough to be barely tolerable to the hand, wrung out over the wound—the bleeding ceased at once, and the incision was closed by a Pean forceps.

The following deductions may be drawn from such an experiment :—

1. Water at temperatures of 120° F. and 10 degrees lower constricts bloodvessels and arrests hæmorrhage from small arteries.

2. Water at temperatures of 100° and 30 or 40 degrees under dilates small vessels and promotes hæmorrhage.

3. Water at temperatures of 50° F. and 20 degrees under checks hæmorrhage by constricting bloodvessels, but this only temporarily.

4. After water at the above temperatures has lost its styptic power, water at high temperatures is still effective.

It appears to me sufficiently evident from the observations I have made, that hot and cold water act in a similar fashion on both the muscular walls of the uterus and those of the bloodvessels. The histological and developmental identity of these two groups of muscular structures leads us to anticipate this, and we do not, I think, strain the physiological analogy if we

presuppose that non-striped muscle wherever found will respond in a similar fashion to these respective stimuli.

Into the consideration of the explanation of these phenomena I cannot at present enter. The query at once arises in considering these results, How can we account for the difference in the action of heat and cold in such tissues? How, for example, are we to explain the rapid loss of energy which follows repeated stimulating by means of cold water, and the even greater apparent increase of energy which is exhibited under repeated stimulation by means of water at high temperatures?

I hope soon to complete some experiments which may serve to throw some light on this essential point. Meantime I must content myself by drawing attention to it.

II. THERAPEUTIC APPLICATIONS.

I have occupied so much of your time in the description of these results that I can only epitomise on the present occasion the remarks I proposed making on the therapeutic significance of the experiments.

I. With reference to the use of hot water in inflammations. It is evident that in water at 120° F. we have an agent of immense power in controlling the local circulation in an organ, provided we can bring it to bear directly on the part. Accordingly, a stream of warm water directed into the vagina cannot fail to effect in a very direct way the circulation in the uterus. The smaller bloodvessels will respond in such a manner that their calibre becoming narrowed under the stimulating effect, the abnormal blood supply will to a large extent be cut off, and the resulting phenomena of inflammation checked. The use of this agent in pelvic inflammation is now recognised as being of so much importance, and is so much employed by gynæcologists generally, that I do not need to dwell on it. I hope the action which I have shown it to possess, in causing contraction of bloodvessels, may help to convince any who may have had doubts of its efficiency.

II. Its efficiency in promoting the tonic contraction of non-striped muscle at once draws attention to its use as a promoter of uterine action. The conditions in which we seek to excite uterine contraction, when it is deficient or absent, may be divided into two classes.

1. Those in which the contents of the uterus have not yet been expelled.

2. Those in which the proper contents of the uterus have been expelled, but where the risk of bleeding is imminent from the absence of the natural contraction of the uterus.

1. Its efficiency in the first of these conditions I shall best illustrate by the following case:—In May 1883 I was called to see a patient whom I found three months pregnant, and in whom

profuse hæmorrhage and regular pains had been going on for some hours. The patient had had two previous miscarriages, but no living child. On examination I found the vagina full of clots, the os rather less than a florin, and the ovum could just be reached by the tip of the finger. I made an effort to introduce my finger into the cavity, but even with the patient under chloroform I failed to pass beyond the cervical canal. I resolved to plug the vagina, but before doing so proceeded to wash it out as a precaution against sepsis. The nurse provided me with water just tolerable to the hand. In order to provide against any water entering and distending the uterus, I conveyed the long vaginal tube with my fingers into the posterior fornix, and retained it there while the water was thrown in. After two or three syringefuls had been injected, I found the water so warm that I felt compelled to withdraw my fingers; but just as I was doing so, was surprised to find the entire ovum projected through the os into the vagina, and actually pushed into my palm.

Since that occasion I have had two similar cases in which the douche was equally effective in securing expulsion of the ovum; and in all cases where the abortion is inevitable, where hæmorrhage is going on, and the os dilating, I should adopt it as a routine practice. If it should fail, its use in no way prejudices the employment of the plug or the sponge tent, should they be necessary; and should it be effective, as I believe it will be in most cases, the serious risk of sepsis in the use of the plug or tent will be avoided.

2. It is, however, in those cases where, after the contents of the uterus have been expelled, and that organ remains flabby and relaxed, and where hæmorrhage is occurring or is imminent, that the value of this agent most appears. I cannot enter fully into the consideration of the question of the use of hot water in postpartum hæmorrhage here, but must content myself with a general summary of the advantages which can be claimed for hot water as a uterine hæmostatic.

(1.) *The rapidity of its action.*—The tracings I have shown no less than the results of experience amply bear this out. I am surprised to notice, in a discussion at the American Gynæcological Society two years ago, Dr F. Barker stated that his chief objection to the use of hot water was its taking twenty minutes to act. Dr Barker's experience is surely singular in this respect.

(2.) *The duration of the tonus produced.*—This gives time for the formation of coagula, so that by the time relaxation begins the bleeding sinuses and vessels are plugged securely.

(3.) *The absence of vascular reaction.*—Every one who has employed cold applications to the bleeding uterus must have been struck with the tendency to recurrence of the hæmorrhage some time after it has appeared to stop, and the rapidity with which the uterus relaxes and assumes the characteristic doughy feeling.

Nothing is more striking in the use of hot water than the persistence of the tonic rigidity of the uterus which follows its employment.

(4.) Further, the remarkable fact which comes out as to the *absence of exhaustion* following its use is one of the most important advantages of hot water. It is undoubted that non-striped muscle will respond to the stimulus of hot water time after time, and with increased vigour, whereas cold water seems to exhaust its contractility almost at once. The importance of this distinction in the event of a recurrence of the hæmorrhage cannot well be over-estimated.

(5.) I would now draw attention to the point which is often apt to be overlooked in comparing the values of hot and cold stimuli. It is almost inconceivable how great must be the violence of the shock which the exhausted system suffers from the immense loss of natural heat which accompanies every application of cold to the mucous membrane of the vagina or uterus.

What could be better calculated to extinguish the last flickerings of vitality than the drenching of an extensive vascular surface with a stream of ice-cold water? On the other hand, the hot application, while doing all, and much more, than the cold to check hæmorrhage and excite contraction, will add to the exhausted system much of that essential heat which has been lost in the escape of the heat distributing fluid. Were the values of the two applications equal in every way but this, this alone, in my opinion, would place hot applications incomparably above the other in therapeutic efficiency.

III. In the last place, I refer in a word to the value of hot stimuli in checking hæmorrhage in other parts of the body.

In plastic operations about the vagina and perineum its value in checking oozing has been long recognised by gynæcologists, and I am often surprised that in plastic operations about the face and elsewhere surgeons do not avail themselves of this means of saving their patients much blood and themselves much trouble.

Lastly, in hæmorrhage from the stomach, *e.g.*, gastric ulcers, I am convinced that better results by far would be obtained by making the patient sip or drink water at 120° to 140° than by the use of ice, or mineral or vegetable astringents.

LITERATURE.

Recent Papers bearing on the Natural Movements of the Uterus and Vagina.

DEMBO.—" On the Independence of the Contractions of the Uterus from the Cerebro-spinal Nervous System," *Inaugural Dissertation*, St Petersburg, 1883.

JASTREBOFF.—" Ueber die Contraction der Vagina beim Kaninchen," *Arch. f. Physiologie Jahrg.*, 1884.

JACUB.—"Ueber die rhythmischen Bewegungen des Kaninchen-uterus," *Arch. f. Physiologie Jahrg.*, 1884.

Papers, etc., on the Therapeutic Use of Hot Water Injections.

EMMET.—*Principles and Practice of Gynæcology*, Chap. vii.
SCHENK.—"Hot Water Injections in Uterine Disease," *American Journal of Obstetrics*, vol. xv. p. 813.
"Discussion on Use of Hot Water after Pelvic Operations," *American Journal of Obstetrics*, vol. xvi. p. 1073.
REGNAULT.—"Hot Intrauterine Injections in Post-partum Hæmorrhage," *Centralblatt f. Gynäkologie*, No. 40, 1885.

The following Authors give an account of cases in which Hot Water was employed with benefit in Uterine Hæmorrhage, etc.

WINDELBAND.—*Deutsche Med. Woch.*, 17th June 1876; and *Medical Times and Gazette*, vol. ii., 1876, p. 159.
RUNGE.—*Berlin Klin. Woch.*, 26th May 1877; and *Medical Times and Gazette*, vol. i., 1877, p. 510.
RICORD.—*Union Médicale*, 5th June 1877.
ATTHILL.—*Lancet*, vol. i., 1878, p. 196.
WHITWELL.—*Lancet*, vol. i., 1878, p. 920.
BELL.—*Lancet*, vol. ii., 1878, p. 72.
PERIGAL.—*Lancet*, vol. ii., 1879, p. 276.
WALTER.—*British Med. Journal*, vol. ii., 1879, p. 367.
DUNCAN.—*Medical Times and Gazette*, vol. ii., 1880, p. 147.
HORNE.—*Obstetrical Journal*, 1880, p. 141.

EXPLANATION OF PLATES.

All the tracings are photo-lithographs, one-half the original scale.
The time lines show seconds.

PLATE I.

1. Tracing obtained from vagina of half-grown rabbit. The downstroke represents the contraction, the upstroke the relaxation. (See note, page 60.)

2. Tracing from vagina of full-grown non-pregnant rabbit. The upper line shows the natural movement which had gone on for two and a half hours previous to this record. At *a*, *b*, and *c* on record line successive quantities of about 10 drops each of water at 51° C. and 49° C. (*i.e.*, 125° to 120° F.), were applied. It will be noted that while the natural rhythm continues somewhat disturbed, the whole tracing leaves the abscissa. In the third line the gradual return to the abscissa is shown. 45 seconds elapsed between end of second and beginning of third line. (Downstroke = Contraction.)

3. A. Tracing from vagina of full-grown pregnant rabbit. (Upstroke = Contraction.)
    The three periods of (*a*) contraction, (*b*) quick relaxation, (*c*) slow relaxation, are clearly seen.

B. Action of hot water on vagina.   5 cc. of water at 115° F. were
   applied during the period indicated by the rise in the signal line
   (lowest line of tracing), and is accompanied by rapid contraction and
   prolonged effect.

4. Tracing obtained from vagina of human female at the eighth month of
   pregnancy by means of a Barnes' bag placed in vagina and connected to
   a water manometer.
      The smaller curves are respiratory.

Plate II.

1. These tracings were obtained from the horn of a non-pregnant uterus.
   A. 5 cc. of cold water, 42° F., were applied at the cross.   Shows long
      latent period and slow contraction curve.
   B. 5 cc. of hot water, 115° F., were applied at the cross.   Shows short
      latent period and quick contraction.

2. Tracing from pregnant vagina.   First part shows natural rhythm.   Second
   part shows effect of cold water applied as indicated by the signal.

Plate III.

These tracings were all obtained from a non-pregnant vagina.   They
   illustrate the effect of repeated applications of cold and hot water.   The
   upper trace A. in each figure represents the result of the application of
   water at low temperatures, while the lower, marked B., represents the
   effect of water at high temperatures.   These figures are fully described
   in the text.

Professor Simpson said that the interesting paper which they had
just listened to was so superlatively good that he would begin by
making a criticism.   He was sorry to find that Dr Murray had
said little or nothing as to the literature of the subject, and he
was sure the Society would have appreciated a brief summary of
what had been already done in this connexion.   He himself
missed this much, and hoped it might be rectified before publica-
tion.   He thinks the profession are greatly indebted to Emmet
for his introduction of the use of hot water as a styptic, and though,
as was pointed out in the paper, his explanation of its action
was unsound, this did not detract in any way from the great value
of warm water as a therapeutic agent.   The observations just
recorded seemed to him to be of the very greatest interest, and the
practical deductions seemed sound and reliable.   He was interested
to observe that it was noted that during contraction the uterus
became pale and bloodless.   The vascular condition of the uterus
during contraction has been the subject of discussion, and there is
still doubt as to the condition of the circulation during tonus.
Lahs and Küneke have different views on this point, the former
holding that the blood is driven out of the organ, while the latter
holds that during this time the sinuses contain the blood, they being
filled during tonus.   This question is obviously one of importance.
What became of the blood which, according to Lahs, is driven out

of the uterine wall during a pain? He supposes it is largely directed to the cervix, and that this congestion of the cervix accounts for the softening changes which go on in that organ during labour. In connexion with this question Dr Murray's observations are of much value, for the pallor of the organ accompanying contraction would seem to confirm the view that the blood is driven from the uterus during tonus. He agreed generally with the deductions made from the experiments. He thought that that relating to the value of hot water as retaining the natural heat of the body to be important. We were apt to forget the great loss of heat, and consequently the diminished chance of reaction which must follow the use of cold water injection and application. The observation relating to abortion was also of much interest, and worthy of being kept in mind in dealing with such cases.

Dr Berry Hart said the paper was one which did not lend itself to criticism. The experiments described and deductions made were, in his opinion, of extreme value. For his own part he differed with Professor Simpson as to the absence of literature. The paper was so full of original and interesting matter that there was no room for "literature," and he was glad to find it had been left out. He felt that some of their papers were overburdened with references to previous authors, and he was glad to find one so full of original observations. He was especially interested in the experiments relating to the checking of hæmorrhage by means of hot water. He intended in any abdominal section in which trouble arose from oozing, to pass hot water into the abdominal cavity, and see whether this did not give satisfactory results. He had listened to the paper with much pleasure and interest, and hoped soon to be able to study it more carefully in print.

Dr Leith Napier said that he noticed that in speaking of the action of hot water in controlling gastric hæmorrhage, Dr Brunton stated that one obtained more satisfactory results by taking the water in sips than by drinking large quantities of it at once; and he was himself inclined to think that this was the case. He had employed the hot douche for hæmorrhage for a considerable time now, and had found it a most convenient and efficient hæmostatic. He did not think it possible to make sure of the proper temperature without the use of a thermometer. The common pocket instruments were graduated to 115°, a usually sufficient temperature.

Dr M'Raild agreed with Professor Simpson that the paper would have been more complete and satisfactory had a short account of the literature been appended. He thought the title, too, erred on the side of vagueness. There was one question which had scarcely been referred to by Dr Murray, and it was one of much interest, namely, What was the theory to account for the manifest difference in the action of hot and cold water on non-striped muscle? The

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question was one, no doubt, of great difficulty, but at the same time it was of much importance. The effect of the hot water depends not merely on the heat, but on the moisture plus the heat. A hot plate, for example, could not have had the same effect. The action was thus, it seemed to him, what might be called " cataplasmic."

Professor Chiene (on the invitation of the President) said it had given him much pleasure to be present and hear this important paper. He was glad to have been present to hear the correct explanation of the action of hot water in controlling hæmorrhage. The subject was one of great interest to surgeons, and he noticed that Dr Murray had regarded their neglect of this hæmostatic as a reproach to them. He thinks that one reason of the neglect which it has met with among surgeons is that in operations in such places as the mouth, where the difficulty in controlling hæmorrhage is very great, there is a risk of the water running into the air passages, and so increasing the danger of the operation. He had had several conversations regarding the matter with Dr Murray, and he had quite recently had two opportunities of putting the matter to the test. The first one was a case of excision of the tongue where the hæmorrhage was severe. In this case the action of the hot water, applied by means of sponges, was only partially effective, and he believed this was because it was not used hot enough or freely enough. In the other case, one of excision of the breast, there was a great deal of troublesome oozing from vessels connected with the ribs, and which could not be secured. Hot water was freely applied, the tissues became instantly blanched, the hæmorrhage ceased, and the wound was closed, scarcely a vessel having been ligatured. The patient had done perfectly well. This use of hot water reminded him of the practice of the late Mr Spence, who made it an invariable proceeding to pour from a kettle a quantity of hot water upon all flaps of stumps and other large wounds. He (Professor Chiene) had often noticed the blanching and pallor which followed this application, and he had no doubt it greatly tended to diminish primary oozing and reactionary hæmorrhage. He had been present with much pleasure, and had learned a great deal from the paper.

Dr Sinclair said that when he read the title of the paper, and came into the room and saw the wall covered with diagrams and tracings, he was inclined to ask *Cui bono?* But he was greatly pleased to find that the paper was an eminently practical one, and he was glad he had had an opportunity of hearing it. He had been of opinion up till now that the action of hot water in checking hæmorrhage was due to its effect in coagulating the blood, and thus, though he had been convinced of its efficiency in controlling hæmorrhage, he had felt some hesitation in using it, in view of the danger which might arise from the coagula formed. He was, however, glad and relieved to find from these observations that it

acted as a true astringent, affecting the muscular coats of the bloodvessels, and not as a coagulant.

Dr Horsley asked whether the use of cold water first in cases of hæmorrhage while risking failure in controlling it, might not also render the action of hot water less efficient afterwards.

Dr Underhill had often been in doubt whether to use hot or cold applications in the treatment of post-partum hæmorrhage. He had always employed cold applications, and had always succeeded in bringing about contractions, and in thus checking the hæmorrhage. But he had often been struck by the great amount of feebleness and exhaustion which followed the use of cold applications to the vagina or abdomen. He had no doubt that the explanation lay chiefly in the amount of heat abstracted by the cold water, etc., and that the patient's already enfeebled vitality was further greatly reduced. There was further often a noticeable tendency on the part of the bleeding to recur after the use of cold water, and he had no hesitation in accepting the experiments as offering a correct explanation of the difference between hot and cold water in this respect. He had followed the reading of the paper with very great interest, and he felt bound to say that he had never before listened to a paper in the Society which lasted upwards of an hour in reading without feeling that he had had enough of it, but in this case Dr Murray had succeeded in securing their interest from the beginning to the end.

Dr Spence had had pleasure in listening to the explanation of phenomena with which he had been long familiar. He had for long employed hot water as a styptic in bleeding from a broken alveolus, crushed finger, etc., and had never found it to fail. He was, however, glad to find that in this practice he was going on strict physiological lines, and it tended to increase his confidence in the practice. He had often noticed how freely a wound inflicted while bathing tended to bleed, and how difficult it was to stanch such. This bore out the view that prolonged cold tended to increase and not to check hæmorrhage.

Dr Barbour agreed with the previous speakers as to the value of the contribution. There was one point on which he would have liked some information, namely, as to whether it was supposed that the action of these stimuli was due to effects on the muscle or nerve. He did not think this had been touched upon in the paper, but he regarded it as a matter of great interest; and he would be glad to hear what view Dr Murray took regarding it.

The President did not feel justified in adding anything further to what had been said. He had listened to the paper with great interest and pleasure, and agreed with everything that had been said as to its practical and theoretical value.

Dr Milne Murray, in reply, thanked the Fellows for their kind reception of his paper. With regard to the matter of literature, he wished to explain that as his paper was an unusually long one,

he did not feel justified in taking up the time of the Society with an account of the literature then, but meant to give a *résumé* of it when the paper appeared in the Transactions. He was of opinion that during a uterine contraction the uterine vessels became almost empty of blood, and this was further confirmed by some observations he had made by means of the arteriograph, which showed that there was both a rise of blood pressure and pulse rate during active uterine contraction. In reference to Dr Hart's remarks, he was satisfied that hot water would prove an efficient hæmostatic in abdominal surgery. He had found that it was efficient in stopping the escape of blood from very large vessels in the rabbit. With regard to determining the proper temperature, he was of opinion that a thermometer, though perhaps convenient, was not essential. He had found that water in which the hand could just be held was at a temperature of from 115° to 120°, and that this was the most convenient temperature to use. We should remember that the mucous membrane is much less sensitive to heat than the skin, and that we can drink water at a much higher temperature (135° to 140° F.) than we could bear to hold the hand in. Thus if water tested by such a means is employed, we need apprehend no danger to the tissues of the vagina or other organs. To protect the buttocks from the water running out, it was a good plan to dip a towel in cold water and fold it close up against the lower hip and vulva. This rendered scalding of the external parts impossible. In reply to Dr M'Raild, he was sorry he could not venture on a very definite expression of opinion as to the explanation of the difference on the action of the different temperatures. He was inclined to think that the high temperatures induced an active molecular change in the muscular tissue, and such a change would be less likely a result of the application of water at low temperatures. He was at present investigating this matter, and hoped to reach some solution of the question by-and-by. He was very glad to hear Professor Chiene's experience of warm water as a hæmostatic, and was sure it would come into wide use in surgery. There could be no doubt that its action was that of a true astringent, and not simply a coagulant, and there need be no dread of its involving risk from the production of coagula which might be carried into other vessels.

Dr J. HALLIDAY CROOM, *President, in the Chair.*

I. *Dr Brewis* showed the UTERINE APPENDAGES which he removed by abdominal section from a patient ten days ago, and made the following remarks:—I regret that the present condition of the appendages gives little idea of their appearance at the time of removal, as great shrinking and loss of colour of the broad ligaments and Fallopian tubes have taken place since then. The Fallopian tubes are tortuous, greatly thickened, and dilated, especially towards their outer ends, and are filled with a white cheesy-looking material. At the time of their removal they had an œdematous, semi-cartilaginous feel. The peritoneum covering the tubes and forming the layers of the broad ligaments is quite smooth, there being no sign of adhesive peritonitis ever having been present. The tubes and broad ligaments when removed were in a state of extreme congestion, and were of a purplish colour. On the anterior layer of both broad ligaments several small cysts are to be seen, illustrating the proclivity of broad ligament cysts to appear on the anterior peritoneal layer. None appear on the posterior surface in these specimens. On the right broad ligament none of those cysts can be traced to originate in the converging tubules of the parovarium, but on minute inspection two of them apparently seem to take their origin in the horizontal canal into which the converging tubules run. Microscopically you can distinguish small cysts of the converging tubules of the parovarium from those of the horizontal canal by the former being lined interiorly with ciliated columnar epithelium, the latter with endothelium. On the left broad ligament one or two cysts apparently originate from the converging parovarian tubules. A moniliform distension of the horizontal canal is visible also. The ovaries are distinctly cirrhotic, about normal size, and fissured on the surface by sulci in some places. On making a section of the right ovary a menstrual corpus luteum can be seen occupying about one-fifth of the area of the cut surface; the rest of the surface has a firm fibrous appearance. The patient is twenty-six years old, has been married five years, and had one child three years ago. She came to me first in August last year complaining of constant pain in the right side and in the back—dysmenorrhœa, dyspareunia, and dyschezia. On examining her I found the uterus retroposed, the right ovary somewhat prolapsed and excessively tender, and the right thickened tortuous tube could easily be felt; the left ovary was lying prolapsed in Douglas's pouch, excessively tender to the touch. She was unfitted for her household duties, as the slightest exertion caused great pain in right side and back; she

could not assume the erect posture, but either sat or crawled about in a state of emprosthotonus; sexual intercourse had been discontinued for two years, and every time the bowels were moved the act was accompanied with great pain, originating from the prolapsed left ovary in Douglas's pouch. Latterly she told me that when she awoke in the morning her ovaries awoke also. I knew from the first that nothing short of the removal of the ovaries would cure her, but before recommending operation I determined to try every other means of alleviating her distress that I could think of. I kept her in bed for six months, treated her with hot douche, glycerine plugs, blisters, tonics, anodynes, etc., but without doing her a bit of good. Two months ago she begged of me to have her ovaries removed, and I asked the late Dr Angus Macdonald to see her, and to do the operation if he thought it advisable. He thought it most necessary and justifiable, and had he recovered from his illness he intended this to be his first operation after his recovery. His melancholy death precluded this, and the patient desired me to operate, which I did last Tuesday week, and am glad to say she is making an excellent recovery from the operation, and I hope from her sufferings also. I would like to draw your attention for a moment to her menstrual history in relation to the pathological processes present in the ovaries and tubes. When twelve years of age she had a severe attack of scarlet fever; she menstruated first at thirteen. Her first menstruation was painful, and from then till now each successive menstruation has been so. During the last four years the pain has been inter-menstrual as well as menstrual. In fact, it has been constant. The menstrual discharge in quantity has been most irregular—sometimes excessive, sometimes scanty. Now, I believe that her ovaries became first affected when she had scarlet fever; that at that time they became congested in the same manner as other internal organs become affected in fevers, e.g., the spleen. Following this initial hyperæmia the formation of interstitial fibrous tissue took place, which caused obliteration of the vessels and the Graffian follicles, and established cirrhosis. This cirrhotic change interfered with the circulation, and established stasis in the vessels which lie between the layers of the broad ligament. The stasis accounts for the extreme congestion we met with in the broad ligament, and also for the œdematous thickened state of the tubes; likewise for the presence of the small cysts before mentioned, which I believe to be merely dropsical accumulations in the tubes from which they originate. It is easy to understand that the addition of menstrual hyperæmia to the already distended vessels of the broad ligament may cause one or more of them to rupture, and in this way the cirrhotic ovary may be concerned in the production of pelvic hæmatocele.

II. *Dr James Ritchie* showed a FŒTUS, one of twins born a fort-

night before the calculated term. Both hands were clubbed to the radial side, the radius was absent on both sides, and no thumb had been developed. The penis sprung from the perinæum behind the scrotum, which was empty. The urethra was patent for an inch and a half from the meatus, the glans penis uncovered by prepuce.. The anus communicated with a rectal *cul de sac* an inch and a half long. On opening the abdomen the sigmoid flexure was seen to be much distended with meconium. It was connected with the rectal *cul de sac* by a fibrous cord ; into its lower and anterior aspect was inserted the thickened remains of the urachus. There was no bladder, the ureters terminating at the lower and back part of the sigmoid flexure. Dr Ritchie remarked that the entire absence of bones is not of common occurrence. In those cases in which the absence of radius has been recorded the thumb has also been wanting. In 1858 Mr Erichsen removed a rudimentary thumb which had been developed although the radius was absent. In 1881 Mr Shaltock showed two cases having the same deformity of the upper extremities as the fœtus exhibited.

III. *Dr Underhill* exhibited an AGNATHOUS AND HYDROCEPHALIC FŒTUS. This was an instance of the rare abnormality due to defect of the lower jaw. The cranium was large and flaccid, and the bones were widely separated. The eyes were well formed, but the nose ended in a small tubular proboscis without any septum. The lower jaw was entirely wanting, and the mouth was represented by a small orifice, just large enough to admit a probe, and hidden behind a rudimentary upper lip. The ears were large and set low on the head, the lower lobes approaching one another under the rudimentary mouth. This form of monster is rare in the human species, only a very few cases having been described, but it is much more common in the lower animals. The mother was a multipara in the eighth month of pregnancy. The fœtus presented by the breech, and the labour was not difficult. There was an excessive quantity of liquor amnii. Dr Underhill proposed to have the specimen carefully dissected, and would lay the result before the Society at a later meeting.

IV. *The President* showed an OVARIAN CYST about the size of a fœtal head, which he had removed ten days previously, the patient making a good recovery. He also showed a FIBROID UTERUS containing a " womb-stone."

V. ON THE ETIOLOGY OF VAGINAL HÆMATOMA OCCURRING DURING LABOUR.

By J. Halliday Croom, M.D., F.R.C.P.E., F.R.S.E., Physician to the Royal Maternity Hospital; Physician for Diseases of Women, Royal Infirmary; Lecturer on Midwifery and Diseases of Women, Edinburgh.

Sanguineous tumours, thrombi and hæmatoma, of the vulva and vagina, whether occurring before, during, or after labour, are comparatively rare accidents. Under such a heading are included all collections of blood forming in the submucous or connective tissue, and they may be found in the cervix, any part of the vagina, labia, or perimetric connective tissue. The condition receives more or less attention in every text-book, and the varieties, with their progress, terminations, and treatment, have been exhaustively discussed, in lengthened memoirs, by Deneux, Laborie, Cazeaux, Hervieux, Hugenberger, and Barnes, and have received shorter notice from many others. Into the general question of the nature and management of these hæmorrhages in general it is no part of my present paper to enter. I wish, therefore, to eliminate, first, the blood extravasations which are limited to the cervix, and which in a minor form are familiar to most of us. In an aggravated and serious form they are at times associated with elongation and hypertrophy. This much I wish to point out, that they are the result of direct pressure and crushing. Second, Those which form in the labia vulvæ, and which are the result of unusual pressure applied to already distended and varicose vessels.

My remarks apply entirely to that form of hæmatoma which is vaginal, usually confined to the posterior wall, and is developed during and after labour. Three such cases have come under my observation, and I now give a brief record of each.

Case I. occurred in the hands of one of my dispensary pupils. Mrs M., a multipara in labour with her sixth child.   When I saw her the membranes had ruptured for twelve hours, and the head had made no progress though the pains had been strong.   On examination I found the head at the brim and movable; os fully dilated. The cause of delay was obvious.   The woman's lax abdominal walls had allowed the uterus to become anteverted,—so much so, that the fundus uteri was on a level lower than the cervix, and consequently the uterine action was quite unavailing so long as the direction of the force was thus misdirected.   I ordered the patient to have a tight abdominal bandage applied, and to have a full dose of ergot.   Two hours afterwards the child was born.   Next day I was asked by my pupil to see the woman, who complained of great bearing down pains, and something protruding at her vulva. On examination I found the perinæum bulging, and a dark swell-

ing protruding from the vagina. I found the whole vagina filled by a large pyriform mass, base downwards, stretching from the posterior fornix down to the perinæum.

She suffered much pain during the night, with strong expulsive efforts; and when she was seen in the morning, a rupture had taken place at the lower end of the vagina, through which had escaped free venous blood and clots. There continued considerable oozing from the aperture for a fortnight, during which time careful antiseptic washing was employed; and at the end of three weeks the tumour had entirely disappeared.

CASE II. occurred in the extern department of the Maternity Hospital. The patient was a multipara in labour with her fourth child. As the patient had been in labour for ten hours, as the membranes had been ruptured for six, and as no progress was made, I was called to see the case and deliver with forceps. I found the pains very violent and strong; the head presenting, but not engaged in the brim. The uterus was markedly anteverted, the patient being a big, heavy woman, with a very pendulous belly. The uterine body was thrown well forwards, and somewhat flexed. The delay was evidently caused by the misdirection of the uterine force. I placed the woman on her back, and had a binder applied.

On introducing my hand, some fifteen or twenty minutes later, into the vagina, I felt a distinct bulging in the fundus vaginæ in the posterior fornix. The nature of this I did not at the time recognise. As the head was movable at the brim, and did not engage even after the position of the uterus was rectified, I performed podalic version. I found a little difficulty in extracting the head from the vagina. With the last pains the placenta and membranes were expelled *en masse*. As violent expulsive efforts continued, and as she complained of great pain, and, although there was no hæmorrhage beyond normal, she looked somewhat collapsed, I made a vaginal examination, and found a large tumour bulging the posterior vaginal wall. It extended in a conical shape, the base being at the vulva and the apex at the cervix. Next morning when I saw the patient I found she had passed a restless night. There was pelvic pain, bearing down expulsive efforts, and retention of urine. On examination the vagina was so occluded that I could not reach the cervix. The conical nature of the tumour, its intimate connexion with the mucous membrane, its firmness and tenderness, as well as the fact that it reached quite down to and bulged the perinæum, combined with a rectal exploration, decided me in coming to the conclusion that it was a hæmatoma of the vagina. Rest, quiet, and opium were enjoined. The next day she was free from pain. There was no rupture of any part of the tumour. In four or five weeks the patient was well, and no trace of the tumour remained.

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CASE III.—Through the kindness of Dr Alex. Sinclair, I saw with him a patient whom he had delivered two or three days previously with forceps. She was a multipara with her fifth child. Dr Sinclair had used forceps because the head was delayed high up, owing to some degree of anteversion of the uterus. The patient had borne her previous children normally. Dr Sinclair told me that when applying his forceps he felt a swelling in the posterior fornix, and on that account experienced some difficulty in applying the instrument.

The swelling on the third day was so large as to fill up the whole vagina, and so closed the canal as to make it impossible to reach the cervix. The perinæum was bulging, and at the junction of the perineal skin with the vaginal mucous membrane there was a rupture which had occurred the previous day, when Dr Sinclair was examining the tumour. The aperture was sufficiently large to admit two fingers, and on doing so the finger came in contact with a mesh-work of cellular tissue and clots. The nature of the tumour was clearly that of a hæmatoma. I need not stop to describe its further course beyond saying, that the cavity was washed out daily with an antiseptic lotion, the patient had no bad symptoms, and in a few weeks was quite well.

The rarity of such cases may be gathered from the following statistics, viz.,—Hugenberger, St Petersburg Hospital, met 11 in 14,000 labours. Deneux saw 3 in forty years. Paul Dubois 1 in 14,000 labours. In Vienna Hospital 18 occurred in 33,241 deliveries.

The records show that these extravasations are associated with very considerable danger. Deneux, out of his 60 cases, had a mortality of 11. Probably it is owing to this fact, Deneux being the earliest writer on the subject, that the opinion has gained firm ground that this condition is an extremely dangerous one. Now, this is scarcely the fact, for out of 50 cases collected by Winckel, death occurred only six times; and the three cases which I had just mentioned all recovered perfectly, and one had a normal labour subsequently. No doubt a good deal depends on their extent and situation, but so long as they are confined either to the vulva or vagina, remain of moderate dimensions, and do not begin in or extend to the perimetric tissue, they seem to be less serious than was at one time supposed. My present object is to point out what I believe to be the etiology of this form of vaginal hæmatoma, or, at all events, *one* of the causes. In whatever respects the cases I have recorded may differ, they had the following points in common:—1st, The women were multiparæ; 2nd, The labour was delayed; 3rd, The cause of delay was misdirection of the uterine power from anteversio uteri or pendulous belly; 4th, At the occurrence of the hæmatoma the head was still at the brim.
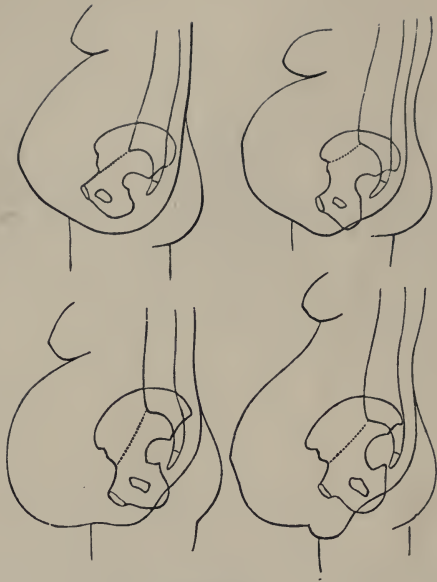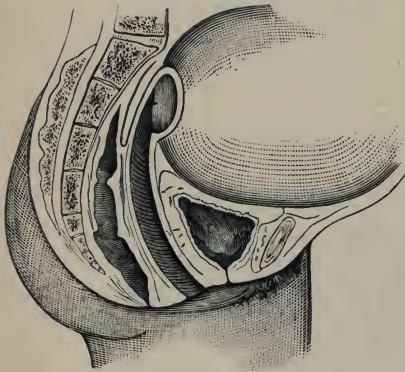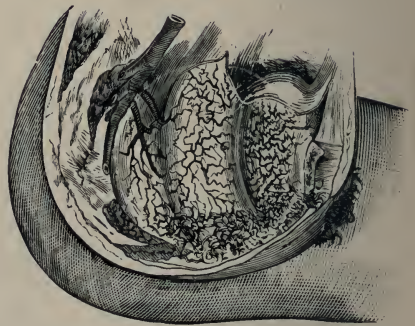
Fig. 1

Fig. 2.

Fig. 3.

First, then, there is the common feature of pendulous belly. This, of course, when not associated with narrow brim, as it sometimes is in primipara, means anteversion of the gravid uterus from relaxation of the abdominal walls.

This is a question of degree so slight that the contraction of the uterus may be sufficient to remedy the displacements, or to such a marked degree that the fundus uteri comes to lie on a level lower than the cervix. Fig. 1 shows the varying degrees of pendulous belly, from slight inclination of the fundus forwards to that where the fundus lies on a level lower than the cervix.

Nay, more, cases have even been related where, owing to a split in the recti muscles, the gravid uterus has prolapsed through the aperture and reached almost to the knees, covered only by skin and fascia. In even moderate cases there is a certain amount of flexion as well, the under part of anterior wall of the uterus being bent over the anterior wall of the pelvis, the symphysis pubis acting as a fixed point (Fig. 2). In this way tension is made to a very marked degree on the vaginal walls. This tension is produced by two factors—1st, The tilting forward of the uterus over the symphysis—this, of course, being in direct proportion to the amount of anteversion ; 2nd, By the uterine pains. They will, by drawing on the posterior vaginal wall, increase the tension already caused by the altered position of the uterus. (This condition is shown in Fig. 2.) It will be apparent, and it is a fact borne out by clinical observation, that the symphysis pubis acting as a fixed point, the greatest tension and stretching will be on the posterior vaginal wall. In an interesting and suggestive paper read to this Society some years ago by Dr Hart on Rupture of the Vagina, he drew attention to two facts bearing on the present subject—1st, That vaginal rupture is generally high up on the posterior vaginal wall ; and 2nd, When it does occur, it is generally transverse. The posterior vaginal wall, especially at its upper part, is, during pregnancy, very thin. This thinning is increased in a normal labour by the uterine action dragging up the cervix and vaginal walls ; but in the cases I have just referred to, there is the very great additional stretching induced by the abnormal position of the uterus, and the long-continued ineffectual contraction of the uterine walls. The venous supply to the vaginal wall consists of a large plexus of veins, some submucous and some just outside the muscular coat, emptying themselves into the internal iliac. These veins, in common with the other veins in the pelvis, are valveless. Fig. 3, after Savage, gives some idea of the number and close distribution of these veins. In pregnancy these veins, to a greater or less extent, become varicose, owing, no doubt, to the heavy uterus preventing the entrance of the venous blood to the vena cava. So uniformly is this varicosity present,

that, under the name of Jacquemier's test, it has come to
be recognised among the corroborative signs of pregnancy.
Often the venous tissues become so distended with varicose enlarge-
ment that they become quite perceptible to the finger in the
vagina, and can be felt projecting as well-marked cyst-like
swellings. Further, it must be borne in mind that, in proportion
to the amount of varicosity, so will the wall of the vessel be thin.
Hervieux, Laborie, and others are not inclined to believe that varix
enters much into the production of these vascular swellings. Perret
has collected a series of sanguineous tumours of the vagina, cervix,
and vulva, and points out that they occur more frequently by
five times in primiparæ than multiparæ, and that they become
proportionately rarer according to the number of the pregnancy.
Now, in this record Perret mixed up all the varieties. One can
easily understand how, under the enormous distending pressure on
the cervix and vagina caused by the advancing head, the mucous
membrane, carried down by the head, glides over the deeper tissues
with a sort of tearing movement. The connecting submucous
vessels are torn, blood is extravasated, and small ecchymoses or
thrombi are formed. This will to a greater or less extent occur
in every labour. But we must not be diverted from the point at
issue. The cases I have recorded were all multiparæ, and hæmor-
rhage took place while the head was still at the brim, and while
no pressure was being made in the vagina. The mechanism of
the production seems to me to be this,—The thin varicose veins
on the posterior vaginal wall all undergo stretching along with
that structure by the uterine efforts; but, in the cases referred to,
the tension is enormously increased by the anteverted position of
the uterus; and further, this tension is long maintained by the
ineffectual attempts of the uterus to right itself. What occurs is
this: during the labour one or more of these vessels give way
under the strain, and rupture, but owing to the tension no
hæmorrhage takes place. When, however, the case is recognised,
and the uterine obliquity overcome, either by position or pressure,
or both, the undue tension of the posterior vagina relaxed,
the compression of the vessels removed, the hæmorrhage slowly
and gradually takes place into the connective tissue. In this way
it comes about that the rupture of the vessels takes place during
the labour, but that the hæmorrhage actually occurs only after
the displacement of the gravid uterus has been rectified.
Into the prognosis, course, symptoms, and risks of these varieties
of tumours it would be altogether absurd in me to enter; they are
well described in every text-book. My object is simply to draw
attention to a hitherto undescribed cause of their production, and
if I may draw a practical lesson, I would add this as one of the risks
of labour complicated with a pendulous belly, and an additional
reason for recognising and rectifying this form of dystocia
early.

Professor Simpson said that the Fellows of the Society were greatly indebted to the President for the record of this rare condition. He had only seen three cases, none of which corresponded to those described in the paper. His first case was a lateral one, developing on the left side. He thought the President had explained very well the mode of its production in his own cases.

Dr Ritchie had seen one case coming on in a patient whom he delivered with forceps, owing to the weakness of the expulsive powers.

Dr Hart thanked the President for his interesting and logical paper. It was worthy of note that the swelling began at the top of the vaginal walls. Dr Somerville stated in his paper that it began in the broad ligaments.

Dr Underhill said that it was interesting that all of Dr Croom's cases occurred in small pelves. He had himself seen only one case; in it the condition did not develop till a week after delivery.

Dr Foulis thought that the uterus and parturient canal should be regarded as one tube, a point which had not received sufficient consideration in the paper. He had seen only one case of this condition.

Dr Napier thought that the anterior lip of the cervix obstructed the passage of the head. The tear was due to undue stretching of the walls in a lateral direction.

VI. ON THE NATURE AND CAUSE OF THE MOVEMENT OF INTERNAL ROTATION.

By D. Berry Hart, M.D., F.R.C.P.E., Lecturer on Midwifery and Gynæcology, Surgeons' Hall, Edinburgh ; Assistant Physician, Royal Maternity and Simpson Memorial Hospital ; Assistant Physician for Diseases of Women, Royal Infirmary, Edinburgh, etc.

Although internal rotation is one of the most striking movements of the part engaging in the pelvis during parturition, we are yet in want, not only of a reasonable explanation of its cause, but also of a detailed description of its nature in the various presentations, normal and abnormal, in which it happens.

In bringing a contribution to this subject before the Society, I purpose considering it under the following divisions :—

1. The hindrances to a right conception of the causation of the movement, due to erroneous anatomy and description.

2. The anatomy of the parts concerned in bringing about rotation.

3. A description of the movement of internal rotation in the various presentations.

4. The causation of the movement of internal rotation, general and particular.

1. The Hindrances to a Right Conception of the Causation of the Movement, due to Erroneous Anatomy and Description.

Our knowledge of the cause of rotation has been greatly retarded by the assumption that it must be due to some shape of the bony pelvis. The tissue lining the pelvis has been regarded as having little influence, although in German text-books the pressure of the tissue lining the posterior wall of the pelvis has always been held to be a factor in determining it. Now, mere change of shape in the bony pelvis will not cause rotation; the only result can be a distortion of the head, *i.e.*, the head will mould itself to the varying capacity of the bony pelvic walls, but not necessarily rotate. This holds even more strongly of the breech. Another very misleading term has been posterior rotation of the occiput in head cases, or chin in face presentations. As I hope to show, no part in the pelvis ever rotates primarily backwards. Rotation is always a forward and inward movement.

2. The Anatomy of the Parts concerned in Rotation.

This must be considered in relation to—

(*a.*) *The Canalized Pelvic and Pelvic Floor.*

(*b.*) *The Fœtal Body, especially the Head.*

(*a.*) *The Canalized Pelvis and Pelvic Floor.*—This may be considered as made up of two parts, one in front of the transverse of the brim and true pelvis, the other behind it. The first is the anterior half of the pelvis and tissues, the second is the posterior half with its tissues.

During the second stage of labour the anterior half of the canalized pelvis is practically the same as that of the bony pelvis, inasmuch as the bladder and retropubic fat are partially drawn out of the pelvis, and it is lined symmetrically with vaginal and cervical tissue.

The posterior pelvic wall, chiefly sacrum and coccyx, is different, however, inasmuch as it has springing from it a segment of the pelvic floor, the sacral segment, attached to the sacrum, coccyx, and edges of the sciatic notches.

This sacral segment is the most important factor in bringing about rotation, and as such must be fully considered.

It is fixed above to the sacrum and coccyx, extends downwards from the bony outlet of the pelvis posterior to the ischial tuberosities, and is unattached at the lower end. It thus includes the posterior vaginal wall and tissues behind it, and has imbedded in it parts of the obturator internus, coccygeus and levator ani muscles, as well as the transversus perinei. Part of the strong

gluteus maximus also enters into its formation (Figs. 1 and 2, Plate II.)

From its attachments it can be pulled back and made to recoil *e.g.*, by Sims' speculum, or driven back by the part of the fœtus engaging in the pelvis. It is the strong segment of the pelvic floor, as will be understood by the following measurements :

Length from tip of coccyx,	.	.	. 3 inches.
Thickness at level of cervix uteri,	.	.	. 2 inches.
Do., at anus,	.	.	. 2 inches.

The length is of course increased during labour. The sacro-sciatic ligaments, coccygeus, and levator ani muscles all help to restrain undue driving back of the lower portion of the sacrum and coccyx as well as of the sacral segment.

It is important to consider it divided into two portions—a right lateral and left lateral—lying respectively to the right and left of an imaginary vertical mesial line on the lower portion of the sacrum coccyx and posterior vaginal wall (Fig. 2, Plate II.) The anterior pelvic wall may be considered as the concave aspect of a segment of a circle, on part of which the rotating head or body glides.

One specially important point to be kept in mind is that the anterior and posterior walls of the canalizing pelvis are of very unequal lengths, and that consequently the anterior portion of the presenting part at the brim will touch the sacral segment, and be compressed or pushed forward by it very much sooner than the presenting part lying posteriorly. The recoil of the sacral segment is increased as we pass towards its lower end, as it acts like a lever of the first kind (Fig. 1, Plate II.)

b. The Fœtal Body, especially the Head.—The only point I wish to note here, is the relation between the head and canalized pelvic floor so far as mere fitting is concerned. One factor in rotation depends on whether or not the head, for instance, passes through the pelvis easily or the reverse. In the production of malrotated head cases this is an important factor. Another way to put this is as follows. The question as to whether the occiput or sinciput will be deeper in the pelvis depends on whether the relation between the head and pelvis is such that the latter accommodates the suboccipito-bregmatic diameter or the suboccipito-frontal. The head is here considered as made up of the occiput and sinciput—the one begins behind, the other in front of, a coronal plane drawn at the posterior margin of the anterior fontanelle.

3. A DESCRIPTION OF THE MOVEMENT OF INTERNAL ROTATION IN THE VARIOUS PRESENTATIONS.

I briefly remark, first, that while the path of the head during rotation is a complex one, and is not exactly known, it is sufficient to describe it as a rotation of the head on an imaginary and varying vertical axis, occurring when the head is at a varying part of the

true pelvis, usually below the level of the ischial spines, *i.e.*, when the leading part comes within the sphere of the sacral segment.

Internal rotation takes place in head, face, forehead, breech, and spontaneous expulsion cases. The clinical facts as to internal rotation in each of these is briefly as follows :—

HEAD.—In the L.O.A., the occiput, known by its small fontanelle, lies at the brim, opposite the left ilio-pectineal eminence, becomes driven down, and when it strikes the left lateral half of the sacral segment, *i.e.*, when asymmetric to the sacral segment, is rotated through quarter of a circle to the front and right, so that it lies wholly or partially within the pubic arch, and as it now lies symmetrically to the sacral segment, rotates no further (*a*, Fig. 1, Plate I.)

In the L.O.A. the occiput rotates to the front and right, *i.e.*, the part deep in the pelvis, and first striking the left half of the sacral segment, becomes rotated to the right and front.

In the R.O.A. the occiput rotates to the front and left through quarter of a circle, *i.e.*, in the R.O.A., the part deep in the pelvis, and first striking the right lateral half of the sacral segment, is rotated to the front and left (Fig. 1, *b*, Plate I.)

In the R.O.P. we may have two rotations—(*a*.) *The normal or long*, and (*b*.) *The abnormal or short*.

(*a*.) *The normal or long* takes place so that the occiput passes from the region of the right sacro-iliac synchondrosis to the pubic arch. Clinically, the occiput is felt leading, and the occiput fits the pelvis accurately—the head is never a small one. In the R.O.P., therefore, when the occiput leads and strikes the right half of the sacral segment before the sinciput touches the left lateral half, it is rotated through three-quarters of a circle to the front and left (Fig. 1, *e*, Plate I.)

(*b*.) *The abnormal or short rotation* has been greatly misunderstood, owing to erroneous terminology. In R.O.P. cases where the head is small, the sinciput is deep in the pelvis, consequently strikes the left half of the sacral segment first, and is rotated by it to the front and right through quarter of a circle. Thus the occiput lies in the hollow of the sacrum, and no further rotation of the head takes place, inasmuch as the head is now symmetrically placed to the whole sacral segment (Fig. 1, *g*, Plate I.) *The malrotated occipito-posterior cases are really rotations forward of the sinciput, occur in cases where the head is small, and can easily be predicted during labour by noticing the deep position of the sinciput,* i.e., *deep position of anterior fontanelle*. They are best termed, therefore, after rotation, sinciput to pubis cases.

I need not detail the L.O.P., as we have either (*a*.) long rotation of the occiput from left to right (Fig. 1, *f*, Plate I.), or (*b*.) short rotation of sinciput from right to left (Fig. 1, *d*, Plate I.)

The rotation of the shoulders is simple. In the L.O.A. the right shoulder is anterior, strikes the right half of the sacral segment first,
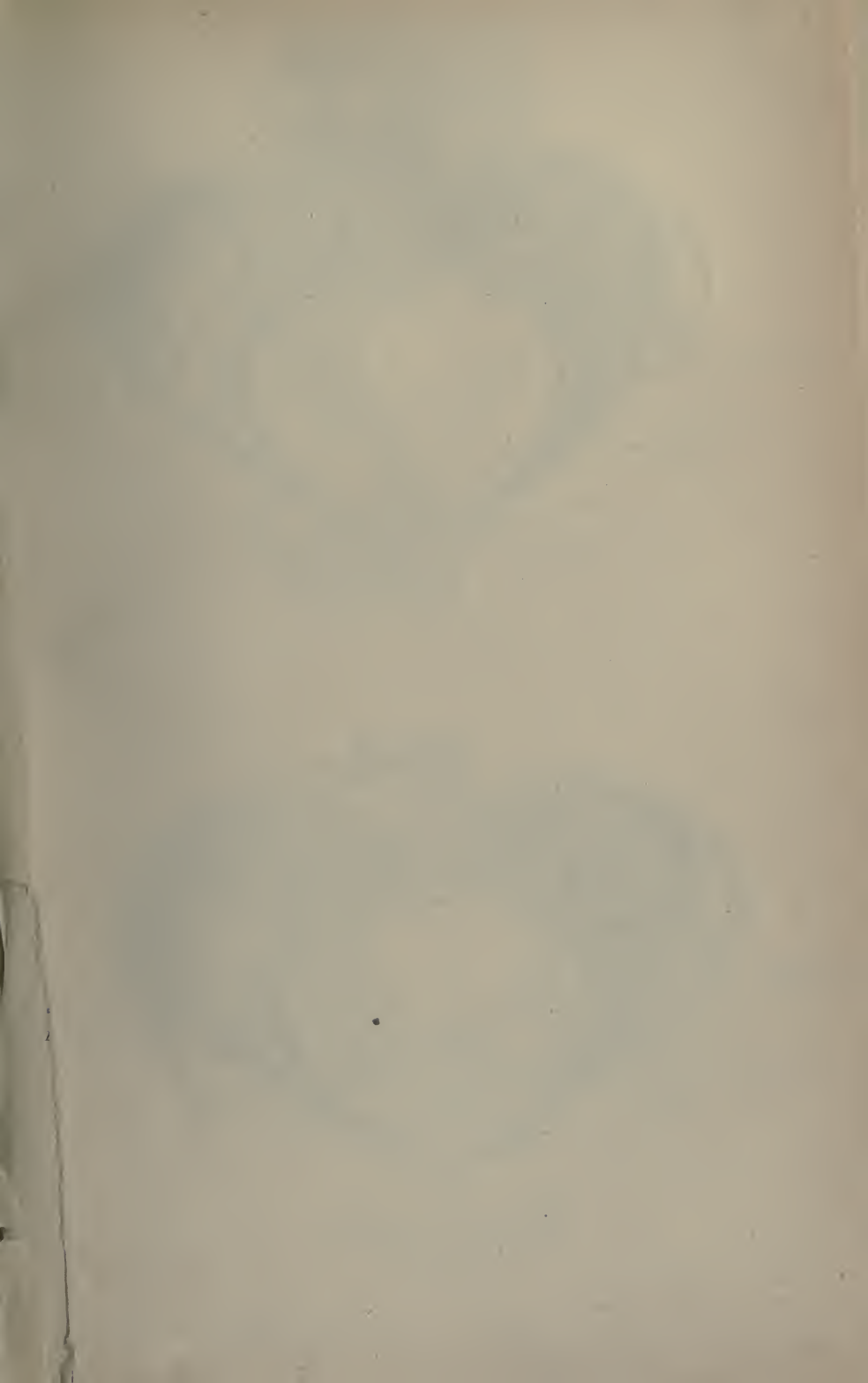
PLATE I.

Fig. 1.
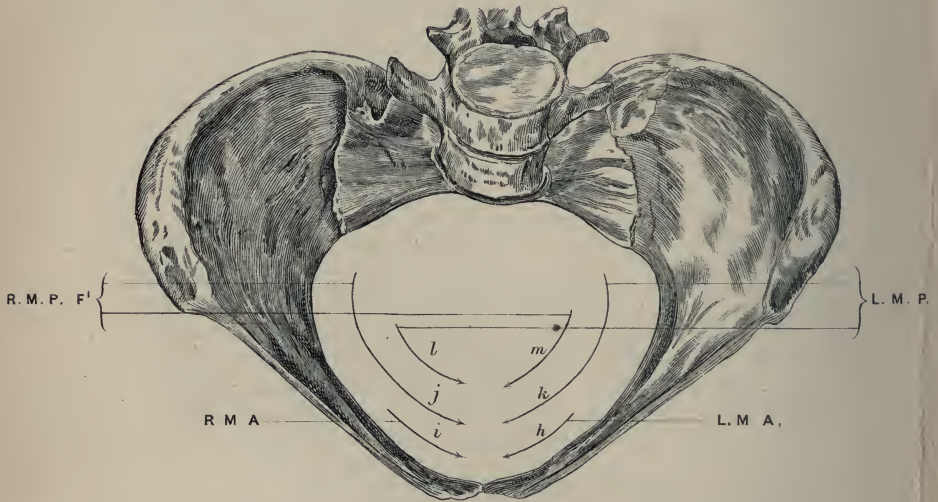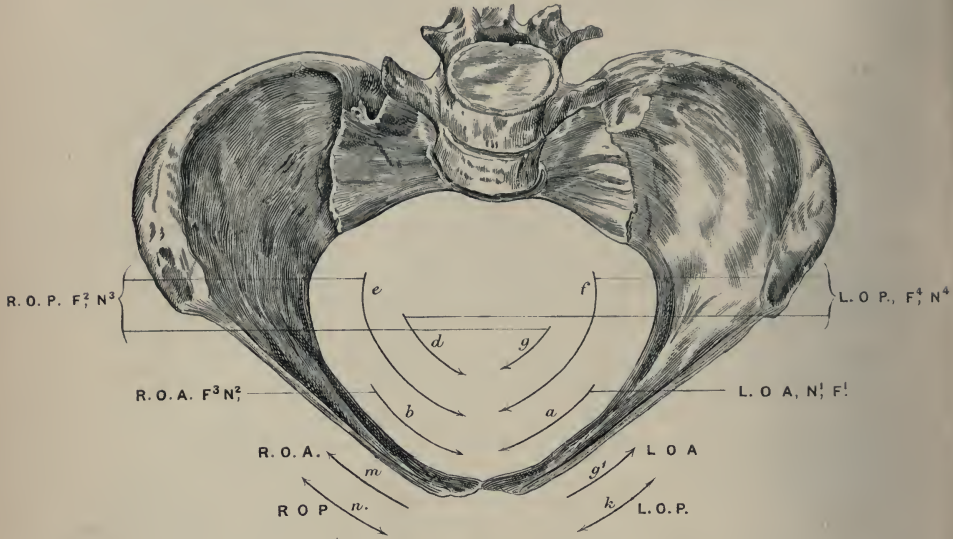
DIAGRAM OF ROTATION

in Head Cases.

R.O.P. F^2, N^3

e f

L.O.P., F^4, N^4

d g

R.O.A. F^3 N^2

b a

L.O.A, N^1, F^1

R.O.A. m g^1 L O A

R O P n. k L.O.P.

R.M.P. F^1

l m

L.M.P.

j k

R M A

i h

L.M A,

Fig. 2.

DIAGRAM OF ROTATION

in Face Cases.

Drawn from nature & Printed by W & A.K. Johnston Edinburgh & London

FIG. 1.

PLATE II.

x

y

Symphysis pubis.

Anus

Perineal body.

Ischiorectal fossa.

Obturator internus.

Levator ani.

Gluteus maximus.

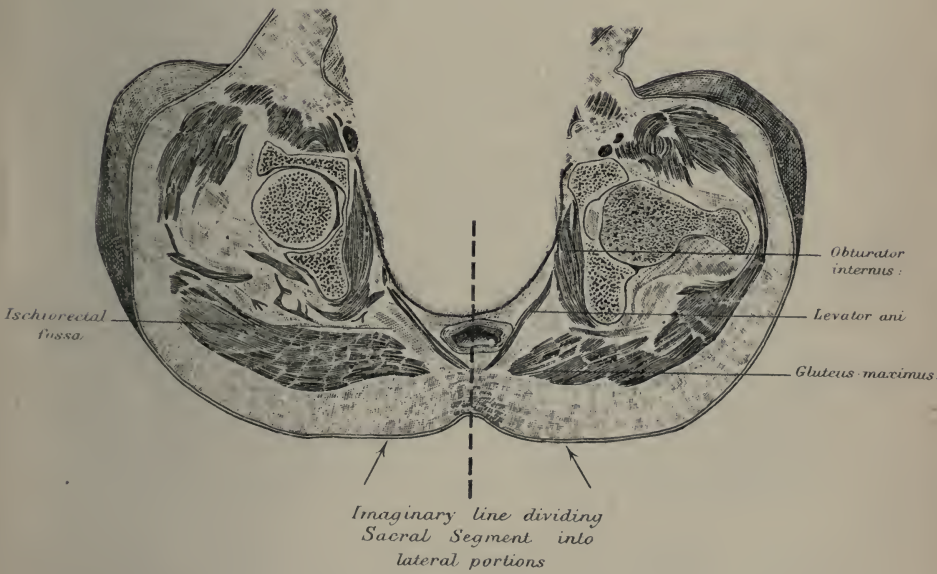Imaginary line dividing
Sacral Segment into
lateral portions

FIG. 2.

and is rotated by the pressure on its anterior aspect, to the front and left, through quarter a circle. The head is therefore externally rotated to the left (restitution).

In the R.O.A. the left shoulder is anterior, and is, for reasons already given, rotated to the front and right, causing external rotation to the right (restitution).

In the L.O.P. and R.O.P. either shoulder may strike a lateral half of the sacral segment, and thus rotation of the shoulders may occur to right and front or left and front in each (*v.* Plate I., Fig. 1).

Internal Rotation in Face Cases.—We name face cases according to the position of the chin (mentum) as L.M.A., R.M.A., R.M.P., L.M.P. In these positions the rotations are in all respects equivalent to the occipital one, the chin taking the place of the occiput. Thus in the L.M.A., the chin makes the short rotation to the front and right; in the R.M.A., it makes the short rotation to the left and front.

In the R.M.P., however, the normal rotation is the long one from the right sacro-iliac synchondrosis to the pubis; but we occasionally get, not the chin rotating directly to the front, but the forehead making the short rotation to the front. In the L.M.P. we have exactly a similar process. In malrotated face cases, therefore, where the chin after rotation is found in the hollow of the sacrum, we have really a rotation of the forehead forward.

In *Breech Cases* internal rotation is always short, the nearer hip rotating through quarter of a circle to the front. The rotation of shoulder and head is easily known, if the general law, to be stated at the end, is kept in mind.

In *Forehead Cases* rotation usually takes place so that the face lies behind the pubis, after which the occiput passes over the perineum prior to the escape of the face and chin under the pubic arch. Forehead cases are so rare, however, that the particulars in each form of the mechanism is not known with certainty. In the most remarkable form of mechanism known as *Spontaneous Expulsion,* where the doubled-up fœtus is driven down into the pelvis shoulder first, and the breech driven over the perineum, we usually get, prior to this delivery of the breech, a rotation of the deep shoulder, so that it passes from the region of the obturator foramen to lie under the pubic arch. A case of this will be presently narrated. Finally, I may note that in the rickety pelvis, where the concavity of the anterior pelvic wall is much diminished, we may get internal rotation occurring as in an occipital case in a normal pelvis; while in the kyphotic pelvis the right occipito-iliac position is common, " the occiput rarely turns forwards, deep transverse position is common, and posterior rotation not uncommon " (Champneys).

4. The Causation of the Movements of Internal Rotation, General and Particular.

M

It will help greatly to clear up our ideas as to the causation of rotation if we first exclude certain alleged factors.

Firstly, The shape of the rotated part can have no essential place in determining this movement, inasmuch as the shoulder in the pelvis, with its soft and varying outline, is rotated in spontaneous expulsions just as the occiput is.

Parts of the fœtus of the most variable shape and consistence, if in the pelvis, may become internally rotated. Occiput, sinciput, chin, forehead, buttock, shoulder, all varying from one another markedly in shape, size, and consistence, yet rotate when once they come within the range of a lateral part of the sacral segment.

Secondly, The shape of the inner surface of the bony pelvis is not of essential moment; or, to put it in another way, the contour of the normal inner aspect of the true pelvis is not necessary to rotation. Rotation may occur in the rickety pelvis where there is great loss of concavity in the anterior and posterior bony pelvic walls, and where the much vaunted inclined planes have lost most of their inclination; or in the kyphotic pelvis, where we have changes diametrically opposed to those of the rickety distortion.

The *presence* of the anterior concave pelvic wall, on which posterior pressure may slide the deep presenting part, more than its precise shape, is important. The great factor in producing rotation is the recoil of one lateral half of the sacral segment on the part first touching it. We have seen that the sacral segment in the canalized pelvic floor is fixed above to the posterior portion of the bony pelvic outlet (viz., sacrum and coccyx, and as far forward as ischial tuberosities), while it is free below. It is thus driven back by the successive portions of the fœtus, causing the well-known bulging of the perineum. Rotation ceases when the part in the pelvis is symmetrical to the sacral segment, *i.e.*, when the head has rotated so that the occiput is symmetrically placed to the sacral segment, we get no further rotation. This shows clearly that it is the deep engaging part first striking a lateral half of the sacral segment, driving it back and causing its recoil, along with the guiding influence of the corresponding pubic ramus, which is the essential cause of rotation.

The recoil of a lateral half of the pelvic floor is not in the conjugate, but as near as may be at right angles to the insertion of that half into the bony pelvic outlet, *i.e.*, more or less parallel to the corresponding half of the anterior segment of the bony pelvis or to the pubic ramus (Fig. 2, Plate II.) This leads the way to the additional factors. The initial Solayres' obliquity of the head, shortness of the anterior pelvic wall, excess of elastic tissue in the posterior bony wall, and therefore greater friction on, and retardation of, the part lying there—all help to bring about a deep anterior engaging portion which shall strike a lateral half of the sacral segment, and be pushed forward during the pain in

a direction nearly parallel to the corresponding half of the anterior segment of the bony pelvis.

We may now apply these general principles to the various instances in which internal rotation occurs.

In the L.O.A. the occiput strikes the left lateral half of the sacral segment early, for the following reasons :—The head with Roederer's obliquity (*i.e.*, occiput deeper at brim than sinciput), and with an antero-posterior diameter in the right oblique of brim (Solayres' obliquity), has its occipital end placed vertically above the left lateral half of the sacral segment, and in consequence of the shortness of the anterior pelvic wall, strikes it early as compared with the sinciput. The latter not only has the longer posterior pelvic wall to travel along (Fig. 1, *x*, Plate II.), but is also hindered by the friction of the greater thickness of tissue there. The left lateral segment, therefore, recoils early on the posterior aspect of the occiput in a direction parallel to the corresponding half of the anterior pelvic wall, *i.e.*, the occiput becomes rotated. The head now lies symmetrically to the sacral segment, with its right and left halves resting on the corresponding halves of the sacral segment, and, therefore, no further rotation takes place. In the R.O.A., for the same reasons, the occiput strikes the right lateral half of the sacral segment, and is rotated to the front and left.

In the R.O.P. we have two possibilities in rotation to explain. There may be first what is termed the normal or long rotation of the occiput inward and to the left, from the region below the sacro-iliac synchondrosis to the arch of the pubis; and the abnormal rotation, where the sinciput rotates from a point below the left ilio-pectineal eminence to the posterior aspect of the pubis, the so-called *posterior rotation of the occiput into the hollow of the sacrum.* This last descriptive term is a very bad one, and should never be used, as both rotations are to the front— the one of the occiput to the front and left (Fig. 1, *e*, Plate I.), the other of the sinciput to the front and right (Fig. 1, *g*, Plate I.) The difference in the rotation is due to the relation in point of size or fitting of the head to the pelvis. If the head so fits the pelvis, *i.e.*, is so large that a sub-occipito bregmatic diameter engages in the pelvis, then the occiput first strikes the right lateral half of the sacral segment, and is rotated to the front; whereas, if the head engages in the pelvis with the sinciput low, *i.e.*, if the pelvis can accommodate the occipito-frontal diameter, then the sinciput first strikes the left lateral half of the sacral segment, and is rotated to front and right.

The same reasoning holds for the L.O.P. Usually the occiput first strikes the left lateral half of the sacral segment, and is rotated to the front and right; or the sinciput, when the head is small, first strikes the right lateral half of the sacral segment, and is rotated to the front and left.

In face cases we have in the L.M.A. and R.M.A. the chin leading and being rotated as in the occipital cases. In the R.M.P. and L.M.P. the size of the head is again influential. If the so-called extension is well marked, then the chin first strikes its corresponding half of the sacral segment, and is rotated to the front. The forehead, however, may be deeper, and thus the forehead is rotated to the front, the chin passing indirectly into the hollow of the sacrum. This happens when the fronto-mental diameter is small. I need not go into detail in breech and shoulder cases. In breech cases the anterior hip is deep, the posterior always being retarded, and thus the anterior is always rotated to the front.

The following clinical cases have been noted by me as helping in the clearing up of this problem :—

Case I.—R.O.P. at brim ; forehead in pelvis, and face at pubic arch. Child's head small, and occiput retarded by posterior pelvic tissue.

Case II.—Seen with Dr M'Call. Prolapse of funis; cervical canal admitted three fingers ; ribs presenting. Chloroform being administered, I passed my hand into the vagina and fingers through cervical canal, pulled down a knee, and left the case. An hour afterwards the breech was in the pelvis and leg down, and hips right and left. The leg pulled on rotated to the front, because this part was first pulled against a lateral half of the sacral segment.

Case III.—Seen with Dr Stanley. Six months' fœtus lying transverse and impacted in pelvis. Shoulder to left and front, and arm protruding. First movement was one of rotation of shoulder to front, and then the body and breech were driven over perineum.

Case IV.—Seen with Dr Darling. Mento-posterior, with forehead low, and chin ultimately found in hollow of sacrum.

All these cases illustrate the law as to internal rotation, which I now state as follows :—

1. Whatever part of the fœtal head or trunk first strikes a lateral half or lateral part of the sacral segment is rotated internally to the front, and in the direction opposite to the lateral half or lateral part of the segment so acting.

2. No part of the fœtus is ever rotated directly into the hollow of the sacrum. The passage of the occiput into the hollow of the sacrum in its so-called posterior rotation is exactly equivalent to the passage of the sinciput into the hollow of the sacrum in normal rotation, and should be excluded from descriptive terminology, as the latter is.

3. The direction of rotation may be predicted in any case by noting what part first strikes a lateral half of the sacral segment.

This view of rotation gives, in my opinion, a more coherent idea of all the rotations than those based on the shape of the head or pelvis only. I do not deny the influence of the shape of the internal surface of the pelvis, but I deny that it alone can determine rotation.

It seems to me, also, that we here see an explanation of the pelvic inclination, Roederer obliquity, Solayres obliquity, and general shape of head and body of fœtus.

The pelvic inclination, as we term it, gives us, by its slope, a short anterior pelvic wall, and may be looked on as due to a slicing away, as it were, of part of the anterior pelvic wall. The kidney shape of the brim, such that the head there does not fully occupy it, and lies with the Solayres' obliquity, is necessary for the distension of the bladder during pregnancy; while the shape of the occiput, chin, neck, and sternum allows of Roederer's obliquity in head cases, or extension in face cases, so as to make a part, either occiput or chin, usually lead during labour. The short anterior pelvic wall and oblique and deep position of a part of the fœtus (occiput, chin, breech) bring necessarily the fœtal part lying anteriorly at the brim early within the reach of a lateral portion of the sacral segment, *i.e.*, tend to cause its early rotation.

DESCRIPTION OF PLATES.

PLATE I., FIG. 1.—Diagram of Rotation in Head Cases as seen through brim of pelvis. The arrows inside give the direction and amount of Internal Rotation ; those outside, the direction of External Rotation.

F^{1-4} = first, second, third, or fourth in frequency of occurrence.

N^{1-4} = first, second, third, or fourth of Naegele.

Thus L.O.A., N^1, F^1 = left occipito-anterior, first in frequency and first of Naegele.

Arrow a = amount and direction of Internal Rotation of occiput in L.O.A.

" b =   "   "   "   "   "   in R.O.A.

" e =   "   "   "   "   "   in R.O.P.

" d =   "   "   "   "   of sinciput in L.O.P.

" f =   "   "   "   "   of occiput in L.O.P.

" g =   "   "   "   "   of sinciput in R.O.P.

" g' = External Rotation of occiput in L.O.A.

" k (double) = possible External Rotation of occiput in L.O.P.

" m = External Rotation in R.O.A.

" n (double) = possible External Rotation in R.O.P.

FIG. 2.—Diagram of Internal Rotation in Face Cases.

Arrow h = amount and direction of Internal Rotation of chin in L.M.A.

" i =   "   "   "   "   "   in R.M.A.

" j =   "   "   "   "   "   in R.M.P.

" l =   "   "   "   "   of forehead in L.M.P.
(chin to hollow of sacrum).

" k = amount and direction of Internal Rotation of chin in L.M.P.

" m =   "   "   "   "   of forehead in R.M.P.
(chin to hollow of sacrum).

R.M.P. = right mento-posterior.

PLATE II., FIG. 1.—Sagittal mesial section of Pelvis to show Sacral Segment.
x and y = length of paths described by fœtal parts lying posteriorly and
anteriorly in pelvis.
e = axial coronal section of pelvis showing sacral segment. The dotted line
separates the two lateral divisions; the arrows show the approximate
direction of recoil of each lateral half on deep presenting parts of fœtus.

LITERATURE.

Only necessary literature given.

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burgh, 1880. *Contributions to Topographical, etc., Anatomy*,
Edinburgh, 1885.

LAHS.—*Die Theorie der Geburt.*[1]

LEISHMAN.—*The Mechanism of Parturition.* London, Churchill,
1864.

LUSK.—*Science and Art of Midwifery*, London, 1882. Lusk's de-
scription of the cause of rotation is suggestive. He says "it is
always the most dependent portion of the presenting part which
rotates to the front."

MARTEL.—*De l'accommodation en Obstetrique.*

SIMPSON, A. R.—*Contributions to Obstetrics and Gynecology*, Edin-
burgh, 1880 (article, "Head Flexion in Labour").

STEPHENSON.—"On the Mechanism of Labour," *Lond. Obstet. Jour.*,
vi. p. 401.

WEST, UVEDALE. — "Cranial Presentations and Cranial Posi-
tions," *Glasg. Med. Journal*, 1875. This is a valuable article,
and contains the following interesting statement in regard to
malrotated occipito-posterior cases:—"The cases which terminate
with the face or forehead at the pubes are originally positions in
which the uterine efforts are so perversely directed that the fore-

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[1] While admitting fully the value of Lahs' work and Professor Simpson's
extension of it, I wish to urge that the special wedge shape of the head is
not necessary to flexion or rotation. Lahs evidently believes that the
priority in movement of the occiput in flexion and rotation is due to its
special shape, but this seems to me more satisfactorily explained as I have
already done. Professor Simpson, as we know, has measured the angles in
Braune's plate of a parturient woman, and found that the occiput is subtended
by a less angle than the sinciput. This would seem conclusive, but we get
the same angles at shoulder and body in Chiari's plate of an impacted cross
birth. Then, again, Lahs explains the passage of the occiput over the
perineum prior to the sinciput coming under the pubic arch by this special
angle again. But in spontaneous expulsion the breech is driven over the
perineum in the same way, showing, I think, that this happens because the
occiput or trunk is so driven through because it lies over the sacral segment
which yields back. I mean by this that it is the sacral segment which
yields back to let the occiput or breech pass, and not any special shape of the
occiput which favours it.

I hold, therefore, that Lahs has not brought forward sufficient evidence as
yet in support of his theory. In saying this I merely condemn my own hasty
acceptance of it in a paper read before this Society in 1879.

head gets down into the pelvis during the first stage" (p. 323, conclusion 11). . . . "The anterior or frontal end of the head will frequently pass first to the floor of the pelvis and then come forward to the arch of the pubes" (p. 323, part of conclusion 15).

Dr Croom thought that a paper offering a satisfactory explanation of the rotation of the head was a great boon, so many theories had been started only to be abandoned—the ischial spines, the planes, the wedge shape of the head, the resilience of the pelvic floor. There was no doubt of the fact that the denominator is lowest and goes forwards; no one had explained why. It might be laid down as a general principle that the lowest part moves forwards. As to the explanation of this, that advanced by Dr Hart seemed to him the most satisfactory that had been given, although he was not prepared to pin his faith to it. The only point in the paper which he would criticise was that it assumed that rotation always took place at a definite point, and took no account of cases where it occurred high up.

Professor Simpson held that the wedge shape of the head explained rotation fully. Each side of the child's head might be regarded as a wedge with the apex over the parietal protuberance, a long gradual slope from this point towards the sinciput, and a short steep slope from it towards the occiput. A wedge of this form offers least resistance on the steep side; hence there was less resistance over the occipital end of the head, which therefore rotated forwards. The side of the head which lay in the back of the pelvis had no influence in determining the rotation. When the convergence of the sides of the pelvis necessitated the rotation of the head to allow of the accommodation of its long diameter to the diameter of the outlet, there was no opening in the back of the pelvis to tempt either extremity of the head to move towards it. There was only an opening in the anterior wall under the arch of the pubis, and when we looked at the side of the head lying towards this open space and noted the wedge shape of it, it became evident that the occipital side of the wedge, with its short, steep gradient, must move more readily in the direction of exit than the sincipital side, which was longer and more level. Hence the rotation forward of the occiput, even in cases where at the commencement of labour it looks towards one of the sacro-iliac joints. The rotation in some occipito-posterior cases of the occiput into the hollow of the sacrum was explainable by the globular shape of the head in such cases. In one or two heads that had come through persistently occipito-posterior, the skull remained bullet-shaped after the head-moulding had disappeared. In one which had lodged some length of time in the canal, the wedge shape of the head had been temporarily undone by the formation of a thick, dense caput succedaneum. The whole surface of the

head, not simply the leading part, was compressed by the elastic tissues.

Dr Leith Napier thought that the paper was a valuable one. He thought that the head rotated so as to get out the easiest way ; it was simply a case of accommodation.

Dr Haultain thought that the shape of the brim might explain the rotation in occipito-posteriors, the vertebro-bregmatic diameter rotating as it passed the brim would cause the head to rotate.

Dr Underhill thought that he could not eliminate the effect of the bony pelvis as Dr Hart had tried to do ; contractions at the brim and outlet modify rotation. The cause of rotation at the outlet was evidently the shape of the pelvic arch.

Dr Ritchie remarked that the rotation took place, not after the pain (as we would expect according to Dr Hart's explanation), but during the pain. He thought that the head travelled in the direction of least resistance ; that the shape of the head, the shape of the pelvis, and its outlet were factors, but the *vis a tergo* and not the resilience of the soft parts was the motive power for rotation as well as for other progress.

Dr Hart, in replying, doubted whether rotation ever occurred above the tip of the coccyx. He thought that Lahs' physics and angles were incorrect, and that the *vis a tergo* was not transmitted through the spine.

MEETING VI.—MAY 12, 1886.

Professor SIMPSON, *Vice-President, in the Chair.*

I. *Mr Skene Keith* showed—(1), a series of specimens of DISEASED OVARIES and FALLOPIAN TUBES, and read the following notes of the cases :—

CASE I.—The patient, aged 34, from whom these specimens were removed, had suffered from pain in the left side, dating back to the birth of her second child in 1875 ; the pain had been much worse after her last child was born, $4\frac{1}{2}$ years ago. The previous treatment has consisted in regular attendance for six months at the gratis hour of an Edinburgh obstetrician. She was greatly emaciated, and the diagnosis was easy. You will see that both the ovaries and Fallopian tubes are diseased.

CASE II.—In this case the pain had lasted five years, and was said to have been caused by an injury received ten days after the birth of her last child. Here also the woman, who was 34 years of age, had become very thin. She had been for several weeks in a gynæcological ward, and had also had treatment from her own

doctor. There were adhesions on both sides, to intestine, and in the pelvis; the right ovary was cystic, the left small and cirrhotic. Both tubes look almost healthy.

CASE III.—This patient, aged 27, was not married, and thought that she had injured herself while nursing her mother seven years ago. The pain was first on the left side, but for several years has been on the right side also. The girl was very fat. She had had all kinds of treatment for years, and had been an in-patient in two gynæcological wards. The operation was a difficult one, and the incision had to be prolonged to nearly four inches. Both ovaries were transformed into cysts, and these were almost entirely between the layers of the broad ligament. The specimen is the left ovary and tube.

CASE IV.—This patient, aged 28, had been married nine years, and had never been impregnated. She had suffered from pain in the back and on both sides for six years. Dyspareunia was a well-marked feature in this case. Previous treatment had been conducted both in private and in hospital. This operation was difficult, due to pelvic adhesions and to the necessity for enucleation.

CASE V.—In this case a constant bearing-down pain followed the birth of the first baby twelve years before operation. The second baby made things worse; but until her last child was born, eight years after the first, the pain was endurable, and she had little treatment. Since then she has been in the gynæcological ward of three infirmaries without receiving any benefit. She was very thin. The uterus was retroverted, the right ovary enlarged and adherent, and the left tube was thought to be dilated and hard. You will see that the left ovary is elongated, and it was this that was mistaken for a distended Fallopian tube; otherwise the diagnosis was correct. Instead of simply allowing the uterus to fall back, I fixed it up to the abdominal wall by means of the right broad ligament, as used to be done in the old clamp ovariotomy days.

CASES VI. and VII.—The next two cases were fixed up in the same way. The first for slight lowering of the uterus, along with disease of both ovaries and tubes, in a patient who had had prolonged previous treatment. In the other case, the uterus lay outside the vulva, and there was disease of the right ovary and tube of eleven years' standing. There were pelvic adhesions in both cases.

CASE VIII.—Those specimens were removed from a young married woman of 22. She had suffered from pain in both sides

N

for five years, ever since her only child was born. Shortly after marriage she became syphilitic, and there was a profuse discharge for some time before her confinement. There was no pus in either tube or ovary.

What the ultimate results will be it is, of course, not possible to say. The 1st, 5th, 6th, 7th, and 8th have all got on quickly; in the others the convalescence has not been so rapid.

These are the preparations from all the cases I have operated on this year.

(2.) A NEW FORM OF VAGINAL SYRINGE, designed to enable the patient to dispense with the assistance of a nurse.

II. UNIFORMITY IN OBSTETRICAL NOMENCLATURE.

By ALEXANDER RUSSELL SIMPSON, M.D., F.R.S.E., Professor of Midwifery and the Diseases of Women and Children in the University of Edinburgh.

AT the meeting of the International Medical Congress in London in 1881, I made a suggestion as to the desirability of attempting to obtain some degree of uniformity in the use of various terms in obstetric teaching and literature. The proposal was favourably received, and a committee was nominated, consisting of members of different nationalities, who were to consult with committees of their compatriots, and report to the subsequent Congress. At Copenhagen, although I was only able to report one meeting of the International Committee without definite result, the subject was still deemed of sufficient importance to be referred back to the committee, in the hope that further interchange of ideas might be made so as to furnish a report which should form a basis for full discussion and final decision in the International Congress to be held in Washington in 1887.

I think it will be well to submit the subject first of all to such a Society as this, and the object of this brief communication is, 1, to lay before you some of the points on which it seems to me desirable to seek for uniformity; and, 2, if we find that we can come to a common understanding regarding them, to propose that we should send them in the form of a circular letter to the various teachers and authors on Midwifery in Great Britain and Ireland, with the hope of ascertaining their views on the subject. It might run somewhat as follows[1]:—

Do you consider it desirable to try to attain uniformity in obstetrical nomenclature ?

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[1] I now give the suggestions modified in accordance with criticisms made by the Fellows of the Society, and in the form in which it was finally agreed to circulate them.

Do you consider it possible to arrive at uniformity of expression in regard to—

> I. The Pelvic Diameters ?

> II. The Diameters of the Fœtal Head ?

> III. The Presentations of the Fœtus ?

> IV. The Positions of the Fœtus ?

> V. The Stages of Labour ?

> VI. The Factors of Labour or any other topics ?

Are you prepared to adopt the following definitions and designations ? or what modifications of them would you propose ?

I. Pelvic Brim Diameters.

1. Antero-posterior: between the middle of the sacral promontory and the point in the upper border of the symphysis pubis crossed by the *linea terminalis* = *Conjugate Diameter*, C.D.

2. Transverse: between the most distant points in the right and left ilio-pectineal lines = *Transverse Diameter*, T.D.

3. First oblique: between right sacro-iliac synchondrosis and left pectineal eminence = *Right Oblique Diameter*, R.O.D.

4. Second oblique: between left sacro-iliac synchondrosis and right pectineal eminence = *Left Oblique Diameter*, L.O.D.

II. Diameters of Fœtal Head.

1. From tip of the occipital bone to the centre of the lower margin of the chin = *Occipito-mental*, O.M.

2. From occipital protuberance to glabella = *Occipito-frontal*, O.F.

3. From a point midway between the occipital protuberance and the foramen magnum to the centre of the anterior fontanelle (*bregma*) = *Sub-occipito-bregmatic*, S.O.B.

4. Between the two parietal protuberances = *Bi-parietal*, Bi-P.

5. Between the two lower extremities of the coronal suture = *Bi-temporal*, Bi-T.

Definition of Presenting Part: of Occiput, Sinciput, and Vertex.

The *Presenting Part* is the part which is during labour bounded by the girdle of resistance or girdle of contact. The *Occiput* is the portion of the head lying behind the posterior fontanelle; the *Sinciput* is the portion of the head lying in front of the bregma; the *Vertex* is the portion of the head lying between the fontanelles.

III. Presentation or Lie of the Fœtus.

1. Longitudinal—
   (1.) Cephalic, including
        Vertex and its modifications;
        Face and its modifications.

   (2.) Pelvic, including
        Breech;
        Footling;
        Knees.

2. Transverse or Trunk, including
        Shoulder or Arm and other rarer presentations.

IV. POSITION OF THE FŒTUS.

1. Left (L.)

2. Right (R.)

$\left\{\begin{array}{l}\text{Occipito- (O.)}\\\text{Mento- (M.)}\\\text{Sacro- (S.)}\\\text{Acromio- (A.)}\end{array}\right\}$

$\left\{\begin{array}{l}\text{Anterior (A.)}\\\text{Posterior (P.)}\\\text{Posterior (P.)}\\\text{Anterior (A.)}\end{array}\right.$

V. STAGES OF LABOUR.

Labour to be divided into three stages.

1. First Stage—from the commencement of effective pains till complete dilatation of os externum = *Stage of Dilatation.*

2. Second Stage—from dilatation of external os till complete extrusion of child = *Stage of Expulsion.*

3. Third Stage—from expulsion of child till the complete extrusion of placenta and membranes = *Stage of the Afterbirth.*

VI. FACTORS OF LABOUR.

1. Powers.

2. Passages.

3. Passenger.

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After remarks by Drs Connel, Leith Napier, and Hart, it was resolved to remit the paper for consideration by the Council; and that their report be presented to the next meeting of the Society.

III. AN UNSUCCESSFUL CASE OF ALEXANDER'S OPERATION.

By Skene Keith, M.B., F.R.C.S.E., Special Assistant Surgeon, Royal Infirmary.

In September 1884, Dr H. A. Peddie took me to see a patient with a very well-marked retroversion. For nine years she had suffered from frequent attacks of sickness, and from constant bearing-down pain; and during six of those years had been treated for dyspepsia. Then she was told that her womb was twisted. The cervix was dilated, the interior of the uterus scraped, and nitric acid was applied. This treatment not being followed by cure, she consulted Dr Peddie, who, after an infinite amount of trouble, succeeded in getting the uterus to keep in good position. Impregnation followed. Three months after the child was born the uterus had again become retroverted, and nothing would keep it right. Numbers of pessaries were tried; she was an in-patient in the Infirmary for six weeks, and she was no better, and at last Dr Peddie came to the conclusion that nothing would do her any good except removal of the ovaries. The patient was very thin; she was of no use; she lay in bed most of the day, and she was scarcely ever free from sickness. The uterus was large, retroverted, and the fundus lay on the pelvic floor. To make absolutely certain that the sickness was caused by the pelvic condition, I packed the vagina with oakum, first turning forward the uterus and keeping it carefully in position. As long as the uterus kept off the pelvic floor she was quite well. This experiment was repeated several times.

The case seemed to be a perfectly fair one to try Dr Alexander's operation of shortening the round ligaments. This was done in October 1884, exactly as described by Dr Alexander, except that the slack of the ligaments was cut off and not packed into the wounds. The patient was not allowed to sit up in bed, even, for five weeks. The sound then passed with a slightly exaggerated curve forward, and she felt quite well.

Nine weeks after operation patient came to say that she had been feeling a little sick. The uterus was a little low in the pelvis, and the Hodge which she had been wearing since the operation was changed to a ring with relief. In another three weeks she was back again, as ill as she had been before the operation, and the uterus was found to have got back into its old position. Pessaries were again tried for four months; but as there was no improvement, the ovaries were removed in May 1885, the connexion of the right one being fixed at the bottom of the wound, in a clamp. There was less disturbance than after the former operation, and now, after a year, she is quite well and the uterus

keeps in position. It would have been most interesting to have allowed the uterus to drop back into the pelvis, but it would have been too hard on the woman to run the risk of a second failure.

The great objection to Alexander's operation seems to be that one has no guarantee that the ligaments which stretched once may not stretch again. In the case I have narrated this appears to have occurred without any special reason, although the uterus had become decidedly reduced in weight, and nine weeks after the first operation the sound passed scarcely $2\frac{1}{2}$ inches. The ovaries were fairly healthy, but the Fallopian tubes were long and somewhat dilated.

Dr Sinclair asked Mr Keith if he was satisfied as to whether the ligaments elongated or gave way altogether. He was of opinion that in this case the ligaments must have given way. He himself had a case some time since in which the wire broke before adhesions were formed. Of course the ligaments gave way and the operation failed. He would therefore like to know whether Mr Keith had reason to believe that adhesions had been formed in this case of sufficient firmness to secure the ligaments. It seemed to him that it was very possible that the ligaments had slipped from the incision before the adhesions were sufficient to bind them securely.

Dr Hart was glad to have Mr Keith's paper. We seldom hear of failures in such-like operations, and it was a satisfaction to have all cases, whether successful or not, recorded, in order that we may form a reasonable opinion of the value of the operation. He had never yet been able to understand why some women complained of so much distress and suffering from retroversion, when others seemed to suffer no inconvenience whatever of what seemed a similar condition. It seemed to him that something other than the retroversion was wanted to account for the symptoms of these cases, and hence he doubted whether this operation was likely to yield any satisfactory results, because the mere cure of the retroversion did not attack the true cause of the suffering which these women endured.

Dr Leith Napier disagreed with Dr Hart in this matter. He was of opinion that the retroversion was the cause of the distress in most of these cases, and that its cure would be followed by relief. Hence he regarded the operation in proper cases as of the greatest utility.

Dr Connel had some months ago sent a patient to Dr Adam of Glasgow. She had been the subject of retroversion for a very long time, and for eight years was almost entirely laid aside by her sufferings. Dr Adam operated; he pulled forward the ligaments on both sides, secured them with catgut sutures. The patient made an excellent recovery, and is now quite well. He was bound to say that the results of this case impressed him greatly

as to the value of the operation, and he would be inclined to look
to it as a satisfactory way of dealing with such cases in the future.

Mr Skene Keith, in reply to Dr Sinclair, said that he was of
opinion that the ligaments had been given abundance of time for
forming proper adhesions, and did not think that the redisplace-
ment could be accounted for save on the supposition that the
ligaments had stretched and allowed the uterus to fall back again.

MEETING VII.—JUNE 9, 1886.

Dr J. HALLIDAY CROOM, *President, in the Chair.*

I. *The President* showed TWO SETS OF OVARIES AND FALLOPIAN
TUBES removed by him for diseases.   In one case the whole pelvic
structures were bound together by a dense mass of adhesions, and
it was with much difficulty that the ovaries could be found.   The
right ovary was found to be so matted that it could not be sepa-
rated, and after a time the tube, which was enormously thickened,
came away leaving the ovary in the pelvis.   Both patients have
done well.

II. The report of the Council on Professor Simpson's paper on
A COMMON OBSTETRIC NOMENCLATURE was presented, and after one
or two verbal alterations were suggested and adopted, it was
resolved to send a copy to all teachers of obstetrics in the United
Kingdom, and at the same time to ask them to state whether they
approved of the adoption of the system, or to indicate any
alteration which they wished to suggest.

III. *Dr Ballantyne* read a paper on SPHYGMOGRAPHIC TRACINGS
DURING LABOUR, of which the following is a summary :—
    The literature bearing upon the subject of sphygmographic tracings
in pregnancy, parturition, and the puerperium is small in amount.
The chief workers in this field of research have been Marey,
Mahomed, Macdonald, Meyburg, Fancourt Barnes, Lebedeff,
Porochjakow, Vejas, and Louge.   These observers are in the main
agreed as regards the presence of high arterial pressure during
pregnancy and parturition, but differ with regard to the state of
the vascular tension during the puerperium—some, as Marey and
Mahomed, considering that it is high, and others, as Meyburg, hold-
ing that it is low, during this period.
    The observations which form the groundwork of this paper were
made upon nearly fifty indoor and outdoor patients of the Edin-
burgh Royal Maternity Hospital.   The instruments employed were
the sphygmographs of Mahomed and Dudgeon ; but preference was

given to the latter, which was found to be much more easily worked and equally reliable.

In two cases of abortion in which tracings were made, it was found that during the uterine contractions there was an increase of arterial tension quite comparable to, though less in amount than, that seen during the pains of labour at the full time.   After the emptying of the womb there was noted a small low tension pulse, due, no doubt, to the blood loss ; but in a very few days there was a return to a pulse tracing of high tension, such as is seen in the normal puerperal state.

In normal pregnancy few tracings were made, as patients seldom came into Hospital till the first stage of labour had commenced ; and when they did enter during pregnancy, it was on account of some cardiac, renal, or pulmonary complication.   The few tracings obtained show a typical sphygmogram of high arterial tension.

In all three stages of labour tracings taken during pains show an increase in the pulse-rate and in the blood-pressure ; this is most marked during the expulsive efforts of the second stage. Numerous secondary wavelets in the line of descent were occasionally observed, chiefly during the first stage, and in cases where the pains were ineffective.

Tracings taken immediately after the completion of the third stage did not show any very marked period of depression, such as has been described by some observers.   In all cases of normal puerperæ, a large, slow pulse of high tension was present ; but in some cases a dicrotous pulse tracing was obtained on the third day, and this latter phenomenon always occurred synchronously with a rise of temperature.

I am inclined to consider that one of the most important factors in the production of a slow, high tension pulse in the normal puerperium is the presence of the puerperal peptonuria, lately described by Fischel.

————

The President congratulated Dr Ballantyne on the very excellent series of tracings which he had obtained, and thought it was a matter for great satisfaction that the younger members of the Society gave themselves so much to the scientific side of the subject.

Dr Hart felt greatly indebted to Dr Ballantyne for his very excellent paper.   It represented an enormous amount of work, which could scarcely be appreciated by those who had not attempted a similar investigation.   It was specially valuable as giving confirmatory evidence of clinical observations.   It came out that a slow pulse seemed to be a good pulse in relation to pregnancy as well as to the puerperium.   He wished to call attention to a fact of some interest in this connexion.   Dr Lauder Brunton mentions that the pulse can be slowed by sipping water. Dr Hart recently had a patient whose pulse remained very rapid

after confinement. He asked the patient to sip a quantity of water, and he was surprised and delighted to find that the pulse fell from 120 to 70 after she had taken a few sips. He thought this was an important fact to know, as it might prove of much value in practice.

Professor Simpson was glad to agree with what had been said as to the value of Dr Ballantyne's paper. He had taken much interest in the observations while they were being made by Dr Ballantyne, and he was now glad to see they had borne such excellent results. Dr Ballantyne had been wisely cautious in making deductions from the experiments, but he thought the observations were of the highest value, and offered an extensive subject of study. He thought the Society had reason to congratulate itself on having so much good work placed before it, and he considered this a valuable addition to the Transactions.

Dr Barbour asked whether Dr Ballantyne had found if the same alterations of the pulse character succeeded abortion as occurred after labour, because if so, it would seem that they were due more to a nervous than a merely physical cause.

Dr P. A. Young asked if any one had noticed the remarkable slowing of the pulse which occurred sometimes after measles— a condition which he had observed more than once.

Dr Ballantyne thanked the Society for its reception of his paper. In reply to Dr Barbour, he said that the same changes occurred after abortion as after labour, but in very different degree.

IV. FIBROUS POLYPI COMPLICATING THE PUERPERIUM.

By J. Halliday Croom, M.D., F.R.C.P.E., F.R.S.E., Physician to, and Clinical Lecturer on Diseases of Women, Royal Infirmary ; Physician, Royal Maternity Hospital ; President, Obstetrical Society, etc.

The influence of fibroid tumours on conception, pregnancy, parturition, and the lying-in, is well recognised. They interfere with conception, they shorten pregnancy, they at times obstruct labour, and they complicate the puerperium by interfering with involution, and causing secondary hæmorrhage, or, as the sequel shows, by inducing septicæmia. These remarks apply mainly to fibroid tumours, properly so called, occurring in groups. The records of fibrous polypi or pediculated submucous fibroids complicating the puerperium are comparatively rare. In some cases parturition and the subsequent changes which go on during the puerperium have exercised a most satisfactory result on even large tumours. These cases, however, are comparatively seldom met with. Lohlein [1] relates a most important observation where a

[1] *Zeitschrift f. Geburtsh. u. gynäk.*, i. 1877, s. 121.

large fibroid tumour which had been diagnosed before pregnancy was diminished greatly during the puerperium; indeed, in a subsequent pregnancy the uterus did not reach its usual size. Kaufman[1] mentions a case where he saw a huge fibroid disappear after abortion, and did not appear again in a subsequent pregnancy. The influence they exert on labour, and their management during the process, do not fall into the scope of this communication.

I have at present to deal only with submucous fibrous polypi complicating the puerperium. So far as I can find, the records of such cases are comparatively scanty. Dr Ramsay,[2] Broughty-Ferry, reported to the Edinburgh Medico-Chirurgical Society in 1858 a case in which a submucous pediculated fibroid weighing two pounds gave rise to hæmorrhage in the third stage, and was expelled spontaneously, though gangrenous, on the tenth day post-partum. The patient made an excellent recovery. In St Thomas's Hospital Reports for 1870,[3] Dr Sedgewick reports a case of gangrenous submucous myoma of the posterior wall of the uterus, the gangrene having been caused by the injection of liquor ferri perchloridi on account of post-partum hæmorrhage immediately after the birth. Süsserott,[4] in his inaugural dissertation, refers to cases published by Maunoury and Ashwell, in which similar gangrenous tumours were spontaneously expelled during the puerperium. There are recorded other cases by Fallin, Tarnier,[5] Oldham, Priestly, and Valtorta, in which the tumour was expelled by simple uterine contraction without being either gangrenous or decomposed, with an entirely favourable result to the mother. The majority, it would appear, of these submucous fibroids do not become gangrenous; when they do so, it is obviously from their coming in contact with the external air, or from direct injury during labour, or the application of some irritant, as in Sedgewick's case. A form of gangrene or necrosis may occur in subserous tumours or interstitial tumours after labour, but this must be carefully differentiated from that occurring in the submucous variety. Gusserow finds that when purulent degeneration and gangrene take place in the submucous variety, it is the result of changes in the circulation due to the uterine contraction. Often the subserous tumours become larger and softer after labour, and give undoubted appearances of fluctuation. This apparent enlargement is due in many cases to the involution of the uterus, the tumour appearing larger in proportion than before. In other cases they really do get larger and softer, owing to serous infiltration from the disturbance of the circulation.

Martin[6] and Horwitz[7] both mention cases of submucous fibroid in

[1] *Monatschr. f. Geburtsh.*, 1862.
[2] *Edinburgh Medical Journal*, July 1858.
[3] *St Thomas's Hospital Reports*, vol. i. 1870, p. 349.
[4] Süsserott, *Inaug. Diss., Rostock*, 1870.   [5] Die Neubildungen des uterus.
[6] *Zeitsch. f. Geburtsh.*, i. 1870, s. 232.
[7] *St Petersburg Med. Zeitsch.*, 14, s. 294.

the puerperium which became gangrenous, and gave rise, through septicæmia, to a fatal result.

Kuchenmeister[1] had a case in which a tumour weighing about a pound was expelled on the forty-fourth day post-partum, after having given rise to high fever from suppuration.

CASE I.—Mrs S. came under my observation years ago as an hospital out-patient.   She had an enlarged retroverted uterus.   For this a sound was passed and a Hodge pessary introduced, and shortly afterwards she became pregnant, and was delivered at term.   Two years ago she came under my care again, at St Luke's Home, suffering from menorrhagia as well as intermenstrual hæmorrhage. The uterus was found enlarged 2 inches in the first stage of retroversion.   A fibrous polypus was suspected, and after considerable trouble I managed to dilate the cervix sufficiently with Tupelo tents to allow me just to feel the base of the tumour.   The uterine contractions which this occasioned, however, were so violent, and the pain and general disturbance so great, that I was obliged to desist.   She passed then into the hands of my friend Dr Kirk, of Bathgate.

I heard no more of her until she was sent back to me by him with her uterus enlarged to the umbilicus, and with her menstruation suppressed for five months.   In the note sent to me with her by Dr Kirk he expressed the opinion that pregnancy alone accounted for the condition.   On her arrival in the town I examined her, and found the uterus enlarged corresponding to a six months' pregnancy.   The cervix was somewhat dilated, and through it I could feel the membranes with difficulty.   Ballottement could be practised.   There could be no doubt that she was pregnant.   The following evening labour pains supervened, and she was delivered of a five months' fœtus and placenta.   Accompanying the third stage there was very profuse hæmorrhage, so much so that I was obliged to explore the interior of her uterus, which I did under chloroform, and with the assistance of my friend Dr Milne Murray.

Attached to the fundus by a thick though soft pedicle I found a well-marked fibrous polypus about the size of a small orange. After consultation with Dr Murray, we determined, owing to the patulous condition of the os and its easy access, to remove the tumour.   Fixing a volsella through its substance, and at the same time steadying the fundus uteri, it was easily removed by avulsion. The hæmorrhage ceased and the uterus firmly contracted.   Immediately after its removal the cavity of the uterus was washed out by a hot uterine douche of 1–2000 corrosive.   The following day the uterus was again washed out.   There was no hæmorrhage, but large pieces of apparently bleached decidua passed, with large extremely fœtid sloughing masses.

On the third the patient was quite well.   On the fourth day the

[1] Gusserow, *loc. cit.*

discharge was offensive, and was accompanied by flaky pieces of fœtid decidua. The uterus was again washed out. For two days thereafter the patient continued to do well, but on the third day there was a rise of pulse and temperature, extreme tenderness over the abdomen, and she died apparently from acute septicæmia on the following morning. No post-mortem was allowed.

I attribute the death of this patient to septicæmia, due to gangrene either of the stump of the tumour, or else to a second polypus becoming gangrenous through the admission of air. The former is, I think, the most likely explanation, judging by the early appearance of the flaky sloughing mass, and the fact that the discharge was offensive from the first.

Case II.—Mrs C. S. was delivered after a normal labour. On the fifth day post-partum, the hæmorrhage being profuse and noticeably offensive in character, my friend Dr John Playfair—under whose charge the lady was—proceeded to explore the cavum uteri, and found an irregular rough body projecting into it, which he diagnosed to be a uterine polypus. He asked me to see the case with him. With careful antiseptic precautions I dilated the cervix uteri with my fingers, and at the fundus uteri I discovered the mass which Dr Playfair had described to me, and finding it pediculated and soft, easily twisted it off with my fingers. The mass was about the size of a Tangerine orange, and of the usual structure. The discharge for many days was very offensive. The uterus was washed out daily with warm corrosive, and the lady made an excellent recovery.

The two cases which I have just recorded present characteristic examples of a rare complication of the puerperium. Judging by the records of the cases recorded, many of these polypi were extruded spontaneously. The presence of such growths during the puerperium is not without grave danger. Sometimes they soften, break down, and decompose, and are the cause of peritonitis, and become the seat of gangrenous degeneration. This is chiefly the case in the submucous fibroid projecting into the cavity of the puerperal uterus similar to those which I have just recorded.

Similar cases are related by Senderling,[1] Yeld,[2] Kiwisch,[3] Wynn Williams,[4] and Duncan.[5] Wynn Williams relates a case where a large submucous fibroid, which obstructed labour, was enucleated and removed in his efforts to break up the child. Weber[6] relates a case in which turning had been had recourse to, and where a tumour as large as a man's fist was removed with the placenta.

Grouping together the cases which have hitherto been described,

[1] Gusserow, *loc. cit.*

[2] *Loc. cit.*

[3] *Prag. Vierteljahrsschr.*, 1871.

[4] *Obstetrical Transactions*, xvii. p. 172.

[5] Gusserow, *loc. cit.*

[6] *Monatsch. f. Gebh.*, xxv. s. 187.

and adding my own two cases, it is convenient to arrange them thus :—

1. Non-gangrenous, in which a healthy tumour was expelled without any artificial aid,   .   . 5
2. Gangrenous, ... 6
3. Gangrenous, or non-gangrenous, removed artificially with hand or instrument, ... 10

These constitute, so far as I know, the cases recorded,   ‾
making a total of   21

As the practical deduction from these we may formulate the rule, that when the tumour is easily accessible, and can be removed without a severe operation in the first few days of the puerperium, such artificial removal ought to be had recourse to in order to prevent the possibility of gangrene and septic absorption. Care must be taken that the whole tumour be removed, in case of the base sloughing and giving rise to septicæmia, as in my first case. If there be any doubt as to the possibility of its entire removal, it had better be left alone and allow nature to expel it spontaneously. If, however, the removal involve a severe operation, it would obviously be prudent not to interfere. Of course in those cases where the tumour gives rise to septicæmia late in the puerperium, its immediate removal is matter of necessity. In all cases of removal of these growths in the puerperium, too much stress cannot be laid on the extreme importance of washing out the cavity of the uterus with corrosive daily, until every trace of fœtor has disappeared. In both my cases pieces of slough and very fœtid discharge continued for many days after the removal; and in spite of careful washing out, one ultimately succumbed.

Dr Underhill felt greatly obliged to Dr Croom for this paper. He had had one similar case, which had a very unfortunate ending. A lady came to him suffering from menorrhagia. She began to take ergot, and no period occurred after that, as she became pregnant. She was delivered in due course, and the labour itself was quite normal. The uterus contracted fairly well, but, notwithstanding this, a persistent oozing from the uterus continued, in spite of all efforts to stop it. He then discovered that there was a large fibrous polypus with a thick pedicle hanging down through the os, and causing the hæmorrhage. Dr Keith was sent for, and removed it. The patient was greatly exhausted, however, and succumbed on the second day. There were no evidences of septicæmia. He recalled another case in which a patient had a large tuberous fibroid which was recognised during her first pregnancy. The labour was in no way abnormal. She became pregnant subsequently,

and it was found that the tumour had entirely disappeared during her previous puerperium.

Professor Simpson could confirm Dr Underhill's experience of the withering of fibroids during the puerperium. He found that in these cases no subsequent trouble arose from them. As regards Dr Croom's cases, he was of opinion that their removal should always be attempted so soon as they are recognised post-partum.

Dr Hart wished to point out that he thought the solution of corrosive sublimate employed was too strong; 1 to 2000, or even 1 to 4000, was quite sufficient, and there was some risk of unsatisfactory results following the use of the strength employed by Dr Croom.

MEETING VIII.—JULY 21, 1886.

Dr J. HALLIDAY CROOM, *President, in the Chair.*

I. *Dr Underhill* showed—(1.) A SPECIMEN OF EXTRAUTERINE GESTATION, sent by Dr Morrison of Hartlepool. The following is an account of the case :—Patient, æt. 37. First and only child born eighteen years ago. On 14th August 1885 she menstruated for the last time. Two months later (12th October), whilst sweeping the yard, she was seized with such severe pain in bowels, accompanied by faintness, that she had to be carried into house and put to bed. A medical man was sent for, and in the beginning of November, three weeks after her seizure, I first saw her. Pelvic examination and the history made it clear that she was suffering from a hæmatocele of considerable size. The history of missed menstruation was of doubtful value, as irregularities had always been of frequent occurrence. She remained in bed, and by the middle of December the effused blood had been absorbed, leaving a rounded tumour, which occupied the pelvic brim on the left side. The enlarged uterus could be felt pushed by the tumour to the right of the middle line. Morning sickness, enlarged mammæ, and well-marked areolæ with colostrum in breasts, left little doubt as to the nature of the case. On 25th January the fœtal heart was heard for the first time. The placental souffle was loudest in the middle line and to the right of it. On 2nd February the fœtal heart was heard for the last time. From the middle of December till now she was able to be up, about, and working gently, though with frequent pains, especially at night. From this time she was confined to bed with pain, lost flesh, and only rested with morphia. The temperature now rose at nights, 100° being the usual record. Sickness was frequent and appetite lost. Her consent to operation was now obtained, and on 9th February an incision was made, about 6 inches long, to left of left rectus abdominus.

The peritoneum was opened, and the tumour exposed. Sponges were packed carefully round the tumour, and an aspirator needle pushed into it. Nothing but blood escaped. The tumour was now incised, and a gush of blood followed from division of placenta. My hand pushed into sac drew fœtus out by head. A large quantity of blood was lost before the sac could be plugged with sponges. When this was done the walls of the sac were stitched to abdominal wound. A tubular structure, found post-mortem to be sigmoid flexure, was with difficulty avoided by suture needle. The cord was cut short and left in sac with placenta, only disturbed by necessary operation. The sponges were removed from interior of sac in four hours. There was no recurrence of hæmor-rhage. Nine hours after operation she died, apparently never having recovered from loss of blood. The post-mortem specimen consists of uterus, sac, and portion of abdominal wall, with operation sutures *in situ*. The uterus has been slit up, and a string passed through Fallopian tubes, showing a rupture close to uterus. At the uterine side the connexion of the sac to the wound is imperfect, but this was exaggerated by tearing at the post-mortem examination. The peritoneal cavity was found to be absolutely clean, not a single drop of blood having escaped into it. Sigmoid flexure also slit up, showing sutures very close. (2.) A SPECIMEN OF RUPTURE OF THE UTERUS, also sent by Dr Morrison, with the following history :—This specimen was obtained from a young woman, a primipara, who was attended by a midwife. A medical man being called in found an arm presenting, and on introducing his hand through the fully dilated os, discovered a large rupture through the back of the uterus, which allowed his hand to pass in among the intestines. As there was some hæmor-rhage going on, he at once turned and delivered without difficulty. A hand was now passed into the vagina for the purpose of remov-ing the placenta ; nothing could be felt but the intestines, which had come through the rent, the placenta having escaped into the abdominal cavity. The intestines were at once returned. The fœtus had been dead some time, was peeling, and had a most offensive odour. Dr Morrison was now sent for. He found the patient pale, but warm, and having a fair pulse. She was at once removed to hospital, where Dr Morrison opened the abdomen and removed the placenta. The abdominal cavity contained about a quart of clotted blood, of most offensive odour, which was partly scooped out, partly washed out with hot boracic lotion, and partly sponged out. When the abdominal cavity had been thoroughly cleaned, a large sponge fixed to forceps passed *per vaginam* was left in the uterus to prevent bleeding, which still continued. A full-sized drainage tube was passed from the abdominal opening through the rent in the uterus past the sponge, and was left hang-ing out of the vagina. The abdominal wound was sutured round the tube, and the patient put to bed, but she only lived a short

time. *Post-mortem.*—The interior of the uterus at the placental side was covered with a purulent layer.

II. *Dr Brewis* exhibited the OVARIES AND FALLOPIAN TUBES which he had removed from a patient nearly a month ago. On looking at the specimens the ovaries were seen to be slightly enlarged, and their contour made irregular by the projection of numerous cysts on the surface. On making a section through one of the ovaries its cystic character was more thoroughly demonstrated, as then it was seen that the bulk of the ovary was made up of cysts, some of which were $\frac{1}{4}$ of an inch in diameter. The amount of stroma was seen to be diminished. The disease was cystic degeneration, the cysts being developed at the expense of the Graffian follicles and stroma. From microscopic sections made by Dr Brewis of ovaries similarly affected, it appears to him that those cysts originate in changes which take place in the stroma around the Graffian follicles. The initial change seems to be a thinning of the stroma immediately around the Graffian follicles. This thinning causes the follicle to become separated from the stroma, the follicle falls in, and with its epithelial lining becomes broken up, and either entirely disappears or forms the cheesy *débris* sometimes found in those cysts. In this way the cyst cavity is produced. The cyst wall is apparently composed of two or three layers of connective tissue cells closely packed together and lying end to end—the long axis of the cells of one layer being parallel to the long axis of the cells of the adjoining layer. The cyst wall is not lined with epithelium. The smaller cyst originates from one Graffian follicle, the larger ones are due to the coalescence of several Graffian follicles brought together by the disappearance of the intervening stroma. The tubes and ovaries were not adherent; there were no adhesions ; the pain complained of, and which was present during nine years, originated in the ovaries themselves, and was not brought about by peritonitis. The patient is now free from pain, and says she feels quite well.

III. *Dr James Ritchie* showed a PLACENTA exhibiting an abnormality in the reflection of the membranes. For one-third of its circumference the membranes, instead of being continued to the margin of the placenta, were reflected at about an inch from its border. That this was not a recent condition was evidenced by the fatty degeneration which had taken place in an exceptionally great degree at the border of reflection from the placental structure. In consequence of this change the placenta was, in the process of expulsion, cut off from the membranes, it was delivered first, and the membranes separately from it afterwards. Part of the border of placenta not covered by membranes had blood clot, not quite recent, adherent to it. The specimen was from a

primipara ; the labour lasted seventeen hours, terminated with forceps ; five grains of ergotin injected subcutaneously so soon as the head was born. Shortly after the birth of the child, although the uterus contracted fairly well, and the patient's general condition was good, flooding commenced, pressure over the uterus with the hand was of no avail, but hot vaginal douche caused expulsion of the placenta and membranes, after which there was no further hæmorrhage. Dr Ritchie had never seen this kind of abnormality ; probably it explained the flooding.

IV. *Mr Skene Keith* showed—(1.) A CYST OF THE BROAD LIGA-MENT AND ENLARGED CYSTIC OVARY. The patient, a girl of 20, had suffered for about a year from pain, before and during menstruation, in the left side. The tumour had been noticed for six months. It felt very hard, and was supposed to be an ovarian tumour. The diseased condition of the ovary accounted for the pain connected with menstruation. The right ovary was healthy. (2.) OVARIES AND TUBES removed from a patient, aged 34, on account of hæmorrhage. There was no fibroid, but general treatment, followed by curetting, had failed to stop the bleeding. No ligatures were left in the abdomen, the cautery being used. There were slight pelvic adhesions. (3.) A SMALL MULTILOCULAR OVARIAN TUMOUR of very dense, firm structure. The right ovary had been transformed into a tumour weighing 17 lb., and was as tough and firm as the one shown. The specimen was situated below the other tumour, and was entirely enclosed in the omentum except where it was attached to the bladder.

V. *The President* showed what appeared to be a TUBAL PREG-NANCY. The patient had been under observation for some time, having been sent in by Dr Barbour under the impression that it was an extrauterine pregnancy. The tumour grew more and more out of the pelvis, and at about the third month of amenorrhœa the operation was performed. The sac ruptured during removal, and a large quantity of blood clot escaped. The structure was being examined by Dr Barbour, who had not yet had time to report.

VI.—A CONTRIBUTION TO THE DETERMINATION OF SEX, DERIVED FROM OBSERVATIONS MADE ON AN AFRICAN TRIBE.

By R. W. FELKIN, M.D. (Marburg), F.R.S.E., etc.

IN *Uganda and the Egyptian Soudan*, which the Rev. C. T. Wilson and I published in 1882, the following sentences will be found at page 150, vol. i. :—" The female population (of Uganda) is largely in excess of the male, the proportion being about three and

a half to one.   This excessive preponderance of the females over the males is due to three causes :—

" I. Careful observation has established the fact that there are a good many more female births than male, and on taking the groups of children playing by the roadside there will always be found to be more girls than boys.

" II. The Waganda are constantly at war with one or other of the nations round them, and their battles, being hand to hand encounters, are fearfully destructive.   In one engagement which came under my immediate notice, fifty per cent. of the Waganda warriors were killed, and, as they gained the day, the loss of their opponents must have been even greater.

" III. The rule with the Waganda, when they have taken a town or district, is to put all the full-grown men to death, and to take the children and women prisoners ; and as the Waganda are almost always at war, there is a constant influx of women, who are distributed among the chiefs and successful warriors."

In doing my part of the work on which these statements are made, I jotted down some figures, which I summarized in a paper I read before the Royal Society of Edinburgh on May 3rd, 1886, as follows :—" The result of inquiries made into the history of 300 pure Waganda women was that 291 had children, and of the first births 144 were males, 147 were females.   Of 500 imported women into whose history I inquired, 482 had children—of the first births only 79 were males, and no less than 403 were females." [1]

These figures were rather startling to me, and set me wondering how they might be explained.   After a good deal of thought, I have come to the conclusion that there is only one possible solution ; and I propose, as briefly as possible, to set that explanation before you to-night, and trust that it may be of some little interest to the Fellows of this Society.

In order to avoid any misunderstanding, I must state that the notes on which I base my theory were made partly in Rubaga, the capital of Uganda, partly on a journey I made from Rubaga towards the Nile to the east of that place, and lastly, on my march from the capital to the northern frontier of Uganda, on my way home in 1879.   I also made some other observations, which will serve as a check, in the Egyptian Soudan and on the east coast of Africa.

Of the total population of Uganda, and of the excess of females over males, I have, on the present occasion, nothing to say, save to call your attention to the very marked difference found there when compared with the statistics of other countries, but this excess is, I think, fully explained in the quotation I made from *Uganda*.

In a paper by Sir R. W. Rawson, page 153, *Bulletin l'Institut*

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[1] " Notes on the Waganda, a Central African Tribe."

International de Statistique, tome i., 1ère et 2ème livraisons, année 1886, I find the following facts, viz., that in England and Ireland there are 49 males to 51 females; in Scotland there are 48 males to 52 females; in the whole of Europe, including Russia, there are 97·4 males to 100 females; in the United States of America there are 51 males to 49 females; as compared with 100 males to 350 females in Uganda.

In only four European states do we find an excess of males over females, viz., in Italy there are 100·5 males to 100 females; in Servia, 103·6 males to 100 females; in Roumania, 105·9 males to 100 females; and in Greece, no less than 113·1 males to 100 females.

In looking over my notes made in Uganda, I asked myself the question, How is it that so many of the women imported into Uganda bear such an excess of female children in their first pregnancy? for I found that among the pure Waganda women the excess of first female births was comparatively small, viz., 100 males to 102 females, as compared with 100 males to 510 females in first births from imported women; and that in subsequent pregnancies of these imported women a more equal ratio prevails, viz., about 100 males to 137 females, although this is a far higher ratio of female births than obtains in any European state.

The only theory which occurs to me, and which seems to answer the question I have proposed, is that " *the temporarily superior parent produces the opposite sex.*"

I must now proceed to explain how I think that this theory fits in with the facts.

The Waganda are a very warlike race; they are nearly always at war with some of their neighbours; they are disliked and dreaded by all the surrounding tribes. It is their custom to kill all the grown-up males and very old women when they have conquered a village or district, and they lead away captive all the boys, young women, and girls. The boys are subsequently sold to the Arab slave-dealers; the girls and women are taken as wives. Now, with the exception of the great chiefs who command the army, no soldier is permitted to take a wife along with him to the war. The result is that, after the sack of a village, the utmost licence obtains, and the nights are spent in excess of every kind.

Looking at the condition of the men and women thus suddenly brought together, we find that the men are flushed with victory, are exuberant, and after having lived for many days on dried bananas, they partake freely of cattle killed for the occasion, and the native wine they have stolen aids in exhilarating them; but you must note that this native wine is not strong, and the alcohol it contains is very pure. The women, on the other hand, are frightened and sorrowful at the loss of their freedom, homes, and friends (for an African woman loves her home and friends as much as other human beings do). They are compelled to perform

exhausting dances for their captors' amusement, and are then ravished, subsequently being compelled to take long marches to which they are unaccustomed.

The man, I hold, in this case is *superior*—mentally he is elated, physically he is in good condition. The woman is *inferior*—mentally cast-down and physically exhausted. What follows? An enormous excess of female children. Therefore in this case, at least, the *temporarily superior parent produces the opposite sex.*

Unless I am much mistaken, my check observations tend to uphold this theory, for I found that of the women captured by the slave-raiders in Central Africa, and brought down to the East Coast, either near Zanzibar or through the Soudan to the Red Sea, those who had been impregnated on the way usually produced female children.

In this case also the same factors are at work—the women compelled to long and exhausting marches, to bear heavy chains, yokes, and loads, water and provisions being scarce; the men well fed, and without care. In talking with Soudan slave-dealers, I was told in answer to my inquiries that, as a rule, only women who have previously borne children are impregnated *en route*, as the young girls are generally "sewn up." The slave-dealers said it did not matter about the older women, for they nearly always produce girls; so that, instead of having only one slave to sell, they have a woman and a female child.

I must next look at the condition of the women imported into Uganda after their arrival, and when they have been distributed to men as rewards for service in the field. Other factors now come into play, which may or may not uphold my theory. Dividing the Waganda men into three classes, there are, first, the chiefs, who have large harems; secondly, men who have several wives (six to twenty); and lastly, those who have only one or two. This last class do all in their power to marry pure Waganda women. Why? Because the pure Waganda women elongate their *labia minora*, and the Waganda prefer such women, unless they can always have a fresh supply. They think that the result of the elongated labia is an increased desire on the part of the women, and hence an enhancement of their own pleasure. It is found as a consequence that in the families of the poorer classes the sexes are as evenly balanced as in Europe.

Among the other classes the men do undoubtedly commit great excesses, but their wives, if they are imported women, have all the hard work to do, and are therefore *inferior*. Against this, however, must be noted the fact that from the time they become pregnant they live separate from their husbands till such time as they have weaned their children, which is at about two years of age.

The ratio of female births after the first among these imported women is more nearly like that of pure Waganda women, but it is

still far higher than in Europe, viz., about 100 males to 137 females. I can only throw out a hint as to a possible support of my theory in the examination of Europeans. I have not worked out this point fully, but I find that in the majority of cases in which a child is born in England under ten months after marriage, in the higher classes after a "*honeymoon*" it is male; in the lower classes, and where there has been no "*honeymoon*," it is female. Why this should be the case is too obvious to specify.

Before concluding this paper I should like to call your attention to two other points of interest which are brought out by my observations :—first, the small percentage of women who *appear* to be sterile in Uganda. In 300 pure Waganda women observed, only 9, or 3 per cent., had no children. In 500 imported women observed, only 18, or 3·6 per cent., were childless, as against about 15 per cent. of women who, I believe, are sterile in England. The second point is the number of children born of these 800 women. Of the 291 pure Waganda women who had children, 74 had 1 child, 35 had 2 children, 140 had 3, 36 had 4, 2 had 5, 1 had 6, and 3 had 7. Of the 482 imported women who had children, 79 had 1 child, 260 had 2 children, 107 had 3, 37 had 4, 1 had 5, and 2 had 6.

Circumstances have prevented me from elaborating this paper as I should have wished. I give it for what it may be worth, for I am of opinion that any facts which an explorer can lay before the public should not be laid aside, but produced for the benefit of scientific men. I am well aware that a great mass of statistics must be brought together to prove any point. I have given what I possess, and hope others will do the same.

The President thought that Dr Felkin had brought out a fact of great interest and importance in relation to the disproportion of the sexes in the observations recorded, and thought it worthy of further attention.

Professor Simpson thought it of immense importance that observations of this sort should be accurately recorded, as it was only by an accumulation of such facts that any useful deductions could be obtained. Dr Felkin's interesting statistics seemed to favour the idea propounded by Starkweather, that the sex of an infant was due to what he calls superiority of one of the parents —the sex of the child being the opposite of that of the " superior " parent.

Dr Connel questioned the physiological superiority of the male individuals under the conditions named by Dr Felkin. He did not think that the over-indulgence in wine, etc., was calculated to promote the superiority of the male. He mentioned a case of a diabetic under his care, whose wife bore him five sons. He went to Neuenahr, became greatly benefited in health, and after his return his wife bore a daughter.

VII. A CASE OF SUPPURATION OF THE PAROTID FOLLOWING OVARIOTOMY.

By Skene Keith, M.B., F.R.C.S.E., Special Assistant Surgeon, Royal Infirmary.

On the 19th of April last I removed an ordinary multilocular tumour of the right ovary, weighing 25 lb., from a lady aged 46. There is nothing of particular interest to be noted about the operation, except that there were somewhat extensive parietal adhesions. The operation was completed in 25 minutes, and when the patient was put back to bed it was not anticipated that there would be any trouble. The progress made up to the afternoon of the fourth day was satisfactory, the pulse never having reached 90, and the thermometer not having registered 100°. At the evening visit the patient complained of cramp in the left lower limb, and on inspection the leg and thigh were found to be somewhat swollen, and the pulse had risen to 116. On the seventh day, in addition to the phlegmasia dolens and quickening of the pulse, the patient began to vomit frequently, but this sickness was stopped by a couple of doses of the ordinary white mixture of the London Hospitals. In the afternoon the temperature was 100°·8; pulse peculiarly irregular at 136. On listening over the heart, strange, indefinite, and irregular sounds were to be heard, causing one to think that some small clots had been carried from the veins of the left thigh to the heart. For the next four days there was steady improvement; the heart gradually slowed down, and on the evening of the tenth day it was contracting 80 times in the minute. The temperature was 99°·2. There had been little change in the swollen leg, but what little there was was of a favourable nature. On the afternoon of the eleventh day the right parotid began to swell, and by evening the patient could scarcely separate her teeth. The temperature had risen two degrees, and the pulse 20 beats per minute. For the next eight days the swelling steadily increased, extending downwards so as to press on the trachea, and it became intensely hard. Then it got boggy, and there was free suppuration from the external auditory meatus, from several points in the cheek, and from two small openings which had been made, one behind and the other in front of the ear. On the fifteenth day after the commencement of the parotid swelling the patient was able to open her mouth far enough to eat bread and butter. The suppuration continued for sixteen days, and the unfortunate patient was able to go home at the end of seven weeks. There was wonderfully little disfigurement after the swelling had disappeared.

It is an interesting question whether or not cases of parotitis following ovariotomy are examples of reverse metastasis or not.

From the number of cases I have heard of where the inflammation of the gland has occurred after operations unconnected with the genital organs, I do not believe that there is any such connexion, although in a paper read before the American Gynæcological Society last year Dr Goodell says:—" Yet I am not sure that an element of sympathy does not exist even in this form (the septic) of suppurative parotitis." The accident is, however, so uncommon after ovariotomy—for example, this is my only case in over one hundred operations for the removal of one or both ovaries—that there appears to be great reason to believe that the inflammation must be purely accidental. In the last ten years of Dr Keith's practice one case of inflammation has occurred, and that was after the removal of a malignant tumour from the umbilicus. In this case there was no evidence of septicæmia, and there was no suppuration ; and what can be said of a case of inflammation of the parotid, going on to suppuration, commencing on the morning of the day fixed for the removal of a cyst of the broad ligament ?

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The President had never seen the occurrence described by Mr Keith, but remembered that on one occasion, in which he removed a breast, parotitis occurred, and proceeded to suppuration.

Professor Simpson regarded the complication as of such rarity that one may regard it as a coincidence.

Dr Brewis had seen two cases of parotitis after ovariotomy in Dr Macdonald's practice. The first occurred on the seventh day, the temperature being 103° F. The left parotid gland was affected, and pain was also present in the site from which the left ovary had been removed. In the second case the right parotid gland was inflamed, the right ovary having been removed. The temperature also was high, and the parotitis lasted a fortnight. In neither case did suppuration occur. It was interesting to note that the parotid gland affected in both cases was on the same side of the body as the diseased ovary. Dr Macdonald used to point out the frequent coincidence of mumps and orchitis in boys.

Dr Felkin had seen one or two cases of parotitis and orchitis, and parotitis and ovaritis in natives suffering from malaria.

VIII. REPORT OF THE ROYAL MATERNITY AND SIMPSON MEMORIAL HOSPITAL, FOR THE QUARTER BEGINNING 1ST NOVEMBER 1885, AND ENDING 31ST JANUARY 1886.

By ROBERT STEWART, M.A., M.B., C.M. (James Scott Scholar, 1885), and R. C. MACWATT, M.B., C.M., Resident House Surgeons.

INTERN CASES.

DURING the quarter (1st November 1885 to 31st January 1886) the number of cases treated in the Hospital amounted to 76. These are detailed as follows :—i-paræ, 40 ; ii-paræ, 16 ; iii-paræ,

7; iv-paræ, 3; v-paræ, 4; vi-paræ, 1; viii-paræ, 3; x-paræ, 1; xiv-paræ, 1.   Out of the number 19 were married, 3 of which were primiparæ.

Age.—Primiparæ: average, 22 years 5½ months; oldest, 36; youngest, 16.   Multiparæ: average, 27 years 1 month; oldest, 45; youngest, 20.

Average Duration of Labour.—Primiparæ: 1st stage, 16 hours 41 minutes; 2nd stage, 2 hours 1 minute; 3rd stage, 24½ minutes —whole labour, 19 hours 6½ minutes.   Multiparæ: 1st stage, 11 hours 1¼ minute; 2nd stage, 1 hour 10 minutes; 3rd stage, 22 minutes—whole labour, 12 hours 33¼ minutes.

Presentations.—Primiparæ: vertex, 34; breech, 2; delivered outside, 2; abortions, 2.   Multiparæ: vertex, 33; transverse, 2; born in cab, 1.

Positions.—Primiparæ: L.O.A., 22; R.O.P., 12; L.S.A., 1; L.S.P., 1; uncertain, 2; abortions, 2.   Multiparæ: L.O.A., 25; R.O.P., 6 (of which one was persistent); R. Ac. Ant., 1; R. Ac. P., 1; uncertain, 3.

Sex of Children.—Primiparæ gave birth to 19 male and 18 female children; multiparæ to 18 males and 18 females.   Full-time male children weighed 7 lb. 6 oz., and measured 19¾ inches on average.   The weight of full-time females was 7 lb. 1 oz., and the measurement 19¼ inches on average.

The heaviest male child weighed 10 lb. 12 oz.; the lightest 3 lb. 12 oz.   The weight of the heaviest female was 9 lb. 2 oz.; of the lightest, 5 lb.   The average weight of the placenta was 1 lb. 8 oz., and the average length of the cord 20¾ inches.   The heaviest placenta weighed 2 lb. 8 oz., the lightest 10 oz.   The longest cord measured 32½ inches, the shortest 7 inches.

Abortion occurred in 5 cases, 3 of the subjects being primiparæ and 2 multiparæ.   Of the primiparous cases one occurred at the second month, the history pointing to over-exertion as a cause; one happened at 5½ months, the mother suffering from secondary syphilis; and the third was also at 5½ months, the fœtus being dead and putrid; the mother had recovered from eclampsia three days before.   Multiparæ.—The one woman aborted at 5½ months, having been maltreated and seriously bruised by her husband several days before; the other, who had secondary syphilis, aborted at the sixth month.

Premature Labours numbered 10.   One elderly primipara miscarried at 7½ months from no assignable cause.   One primipara gave birth to a dead and putrid fœtus at the eighth month, she herself afterwards dying in Hospital from acute bronchitis and catarrhal pneumonia, from which she suffered on admission.   The 8 others occurred between the seventh and eighth months.   All the cases were vertex presentations.

Mortality.—Maternal, 1, previously referred to, from acute bronchitis and catarrhal pneumonia a few days after labour.

Infantile, 6.   One premature lived for $22\frac{3}{4}$ hours; two from suppression of urine and scleroma; one from congestion of the lungs; one from prematurity and consequent non-viability; one from prematurity and congenital syphilis, being kept for three weeks in the incubator, and death occurring at the end of that period.

Fœtal, 7.   Three dead and putrid (two of these being premature at the seventh month).   One, a breech case, was still-born; one a syphilitic six months' putrid fœtus; one a transverse presentation, evidently premature; and one a natural labour, with suspended animation on the part of the fœtus, which could not be resuscitated.

Classification of Labours.—Natural, 57; laborious, 5; preternatural, 3; complex, 6; laborious and complex, 4; preternatural and complex, 1.

Laborious.—In one the os remained about the size of half-a-crown for eight hours, and showed no signs of further dilatation. The patient was anæsthetized, and a Barnes' bag introduced, which was expelled, and the labour was allowed to go on naturally after this.   The os rapidly dilated, and the child was soon born.

Instrumental.—In a woman aged 45, a xiv-para, the second stage had gone on for $4\frac{3}{4}$ hours; she was anæsthetized, and delivered with forceps, the head being engaged in the brim.   In a primipara the second stage had lasted $4\frac{1}{4}$ hours; the head engaged in the brim; uterine inertia was coming on; she was anæsthetized, and delivered with forceps.   In the remaining two there was excess of liquor amnii.   Part of liquor removed, but no progress being made, high forceps were used in both cases.

Preternatural.—One a breech case, in which the child was still-born.   One a transverse presentation, the position being right acromio-posterior; podalic version was performed; the child was still-born, evidently premature.   The last was also a transverse presentation, the position right acromio-anterior, with the left arm behind the neck.   Podalic version was performed here also.

Complex.—(1.) The labour complicated with acute bronchitis and catarrhal pneumonia, to which the woman succumbed, as previously stated.

(2.) With acute bronchitis and mitral disease.   The labour was rapid and natural, and the mother left Hospital recovered from her bronchitis and her heart condition improved.

(3.) With acute bronchitis and pneumonic patches in both lungs.   The patient was removed to Royal Infirmary a fortnight after delivery in an unsatisfactory condition.

(4.) With adhesion of a portion of the membranes.

(5.) With the like complication.   In both the latter cases the retained portion of membranes was removed under chloroform.

(6.) The patient passed through an attack of eclampsia three days previously, which lasted for 36 hours.   She came into hospital

comatose, with stertorous breathing, and much albumen in urine, with casts. She was treated with pilocarpin, chloral, and bromide of potassium, and purgation induced by croton oil. On recovering from her stupor she received diuretics. A few days after her labour her temperature rose to 102°, and remained high for some days. It gradually fell, and she left hospital a month after admission with the albuminuria persisting.

Laborious and Complex.—These were cases of prolonged labour with uterine exhaustion and forceps delivery, followed by post-partum hæmorrhage. In all the hæmorrhage was promptly checked by the hot intrauterine douche of corrosive sublimate solution (1 in 2000), and the puerperium went on favourably.

Complex and Preternatural.—This was a case of breech presentation, with albuminuria. On admission the os uteri was almost fully dilated, and as yet no abnormal signs had occurred. About an hour after this the os was fully dilated, and suddenly, when talking to the nurse, a convulsion occurred. She was immediately anæsthetized, and traction was made on the breech by hooking the index fingers in the child's groin. The child was born alive and well. The mother's perineum ruptured to the verge of the anus, and was stitched. Two drops of croton oil were given, and as she continued to have fits, she was kept under chloroform. Chloral and bromide of potassium were given internally, $\frac{1}{3}$ grain of pilocarpin was given hypodermically, digitalis stupes frequently applied to the back, and diaphoresis further encouraged by the hot pack. Six hours after birth of child she developed œdema of lungs; the fits continued with great severity, and with the average interval of half an hour, her coma deepening. Chloral and bromide of potassium, along with acetate of potash, tincture of strophanthus, and tincture of digitalis, were injected per rectum, and about nine hours after delivery she was dry cupped over the loins and nape of the neck. Pressure on the carotids was exerted during the convulsions. Fourteen hours after delivery the fits ceased, and consciousness began to return, but her breathing was extremely laboured, owing to the œdema of the lungs and air passages, and poultices were applied to the front of the chest. Two hours before this—twelve hours after delivery—she passed a great quantity of urine, and her bowels acted very freely. Twenty hours after delivery her pulse became almost imperceptible, her breathing very difficult, her face cyanosed, and with difficulty could she be aroused. Two ounces of brandy were administered per rectum, after which she began to improve, her breathing became easier, and shortly she fell into a peaceful slumber, from which she awoke perfectly conscious. She continued to improve, but the œdema of the lungs did not clear up, and four days after labour pneumonia of the right base was detected, from which she subsequently recovered, the chest sounds returning to normal. Her amount of urine gradually rose to normal, and the albumen slowly diminished till three days

before dismissal, which was five weeks after confinement, when it was absent. The perineal stitches had been torn during the convulsions, and she was advised to have an operation performed for restoration of the perineum when her strength would permit.

Both the eclampsic patients were primiparæ, and unmarried.

Laceration of Perineum occurred in six cases, all being primiparous. All were stitched immediately after labour, and healed by first intention, except the eclampsic case just quoted. With this exception also the tears were not extensive. They were dusted with iodoform and bismuth during the healing.

Puerperium.—As a rule the temperature never rose to 99°, and in many cases fell to 97°·4. In one case the temperature went as high as 103°·8; the abdomen was tympanitic, the tongue coated, and the discharge scanty. The uterus was douched every three hours with 1 in 2000 corrosive sublimate solution, which lowered the temperature, and the intervals between the douchings were lengthened according to this fall. She showed signs of mercurial poisoning, her gums becoming spongy, salivation and diarrhœa supervening. The douche was changed to a solution of permanganate of potash and chlorate of potash, and she left Hospital well, though weak. In the puerperia complicated with pneumonia the temperature rose, as was to be expected—in one case rising to 103°. In some cases, where the flow of milk was long in coming to its full amount, the temperature rose from 99° to 101°, falling when normal lactation was established. The breasts, when occasion demanded, were prevented from filling by a flannel bandage firmly applied over them, which invariably had the desired effect.

Ophthalmia Neonatorum.—Immediately after the birth of each child a 2 per cent. solution of nitrate of silver was dropped into the eyes. Slight ophthalmia occurred in six cases, which disappeared in a few days under a continuance of this treatment every four hours, along with an eye wash of a solution of 2 grains to the ounce sulphate of zinc. The cases of ophthalmia could not be traced to specific origin.

Antiseptics.—A solution of 1 in 2000 corrosive sublimate was used for douching purposes. The instruments used were dipped in 1 in 30 carbolic acid solution. Iodoform was applied to any abrasion of the perineum.

Operations.—One child had spina bifida, into which was injected 30 minims of Morton's solution (iodine 10 grains, iodide of potassium 30 grains, glycerine 1 ounce), which lessened the tumour considerably, and it became solid after a second injection. Three weeks later symptoms of hydrocephalus supervened, to which disease the child is known to have succumbed at the age of 3½ months.

An extensive recto-vaginal fistula with destruction of the perineal body of old standing, and which had not been benefited

by two previous operations, was repaired, and complete cure effected.

Sphygmographic tracings were taken from the cases of eclampsia in the various stages, also from the cases of pneumonia and mitral disease, and from other patients who were the objects of interest.

Extern Cases.

The total number of extern cases reported during the quarter was 168. Of these there were—

Multiparous, 141, or 84 per cent.; primiparous, 27, or 16 per cent.

Presentations.—Vertex, 157, or 93·8 per cent.; breech, 3, or 1·78 per cent.; transverse, 2, or 1·2 per cent.

Positions.—Vertex cases: L.O.A., 132; R.O.P., 16; R.O.A., 2; L.O.P., 1; 7 unreported or doubtful. Breech cases: L.S.A., 1; 2 unreported. Transverse cases: L. acrom.-ant., 1; R. acrom.-post., 1.

Classification of Labour.—Natural, 141; laborious, 12 (instrumental 10, lingering 2). Preternatural, 5 (breech 3, transverse 2). Complex, 3 (twins 2, prolapsus funis 1).

Abortions.—8 cases (2 at the second month, 2 at the third month, 2 at the fourth month, and 2 at the fifth month).

Details of Special Cases.

Laborious.—Forceps were used in 10 cases: in 2 for R.O.P. position, in which the head stuck transversely; in 4 for persistent occipito-posterior position of the head; in 2 for prolonged second stage and inertia uteri; in 1 for justo-minor pelvis; and in 1 for speedy termination of labour in hysterical convulsions in a very neurotic primipara. Two were high forceps, the others all low.

The *Lingering* labours were due, one to impacted anterior lip of the cervix, the other to a persistent occipito-posterior position of the head in L.O.P. case mentioned above.

Preternatural.—In the transverse cases podalic version was performed after full dilatation of the passages, and delivery effected at once. The children in both cases were alive.

Complex.—In one of the twin cases the children were both females, in the other both males. Where the sex was female, the presentation was in both vertex, and labour was terminated under the natural efforts. In the other case one of the children lay transversely in the left acromio-anterior position, with the right arm down the vagina. The passages were fully dilated when seen, and the waters well drained from that loculus; but the child being small, and the membranes of the second child intact, podalic version was performed without much difficulty, and the child extracted. In the second child the presentation was cephalic, and

after rupturing the membranes, the uterus tending to inertia from the prolonged labour, it was also turned and delivered. Both children alive. In the case of prolapsus funis, the cord failing to be replaced, and the child showing signs of asphyxia, podalic version was done. Child born in state of suspended animation, and failed to be resuscitated.

Abortions.—In five of the abortion cases the secundines had not come away either wholly or in part. In all of these the uterus was completely cleared out whenever they were seen; dilatation by tupelo tents being in one case necessary. In one instance where bleeding had been going on for a few days, the woman was found in a state of collapse, the pulse imperceptible, and the skin clammy and cold. On examination the placenta and membranes were found to be still in the uterus. These were cleared out, and the cavity of the uterus douched with hot corrosive sublimate solution, when the bleeding at once stopped. Ether was given subcutaneously, and a mustard blister applied over the heart to stimulate the patient, whilst the cutaneous heat was restored by means of hot bricks wrapped in old blankets packed round her. She was placed upon iron, and ultimately made a good recovery.

Adherent Placenta.—There were three cases of adherent placenta, and in all the patients were anæsthetized, and the separation accomplished artificially by the introduction of the hand.

Post-Partum Hæmorrhage.—Three cases of bleeding after delivery were reported; and when the manipulative treatment and ergot failed, the bleeding was always stopped by the hot intrauterine douche.

Deformity.—One child was born with slight hypospadias.

Sex.—Males, 89; females, 79; sex of abortions at second month not ascertained.

Mortality.—Maternal, 1; fœtal, 8; infantile, 2.

Maternal.—Mrs D., vii-para, was delivered by means of forceps at 7.30 A.M., 8th November 1885. The position was R.O.P., and the head, which was of large size, had stuck transversely. On the morning of the 9th she began to complain of pain in the abdomen and pelvis. On examination the abdomen was considerably distended and tender to the touch, with marked tympanites. The temperature and pulse reached their maximum on the evening of the same day, registering 103° and 160 respectively. The patient was at once put upon antipyretic treatment of quinine and aconite, and the bowels well moved, whilst the uterus was frequently washed out with corrosive sublimate solution. On the 10th the condition was very much improved, the temperature being now 98°·6 and the pulse 120. The medicine was then changed to a mixture of quinine and hydrobromic acid, and the douching still kept up. On going to see her on the morning of the 11th she was found in a state of coma, from which she could not be roused, and died two hours afterwards. Those in attendance upon her during

the previous night stated she had had convulsions. A catheter was passed to draw off the urine, but could get none. The woman was of intemperate habits, and from the birth of the child to her death she was more or less under the influence of alcohol.

Infantile, 2. One lived one day, the other nine hours. Both were premature.

Rise of Temperature.—The tendency to pyrexia, except in the isolated case above referred to, was always checked by quinine and the use of the hot douche.

Split Perineum.—In four the tear was so bad as to require operative interference. Carbolized catgut was used, and in all the cases the result was perfectly satisfactory.

IX. REPORT OF THE ROYAL MATERNITY AND SIMPSON MEMORIAL HOSPITAL, FOR THE QUARTER ENDING 30TH APRIL 1886.

The Intern Cases are reported by MACBETH MOIR, M.A., M.B. ; the Extern by THOMAS W. DEWAR, M.B., C.M.

INTERN CASES.

DURING the trimestre (1st February to 1st May 1886) 72 cases were treated. These were :—i-paræ, 37 ; ii-paræ, 18 ; iii-paræ, 3 ; iv-paræ, 4 ; vii-paræ, 4 ; viii-paræ, 2 ; ix-paræ, 2 ; x-paræ, 1 ; xii-paræ, 1 ; total, 72. Of the total number 21 were married ; of these 5 were i-paræ.

Age.—Primiparæ : average, 21·4 years ; oldest, 35 ; youngest, 16. Multiparæ : average, 24·8 years ; oldest, 40 ; youngest, 21.

Presentations.—Primiparæ : vertex, 34 ; breech, 2 ; abortion, 1 ; total, 37. Multiparæ : vertex, 32; breech, 2; transverse, 1; total, 35.

Sex of Children.—Primiparæ gave birth to 16 male and 20 female children ; 1 male abortion at 5th month ; total, 37.

Average weight of male children, 7 lbs. 5 oz. ; average weight of female children, 6 lbs. 15 oz. Average length of male children, $19\frac{5}{7}$ inches ; average length of female children, $19\frac{3}{19}$ inches.

Heaviest male child, 8 lbs. 12 oz. ; heaviest female child, 8 lbs. 8 oz.

Longest male child, 21 inches ; longest female child, 21 inches.

Multiparæ gave birth to 20 male and 15 female children ; total, 35.

Average weight of male children, 7 lbs. 12 oz. ; average weight of female children, 6 lbs. $14\frac{2}{3}$ oz. Average length of male children, $20\frac{1}{3}$ inches ; average length of female children, $19\frac{1}{4}$ inches.

Heaviest male child, 9 lbs. 4 oz. ; heaviest female child, 9 lbs.

Longest male child, 23 inches ; longest female child, 22 inches.

Premature Labour occurred in 12 cases—1 at the 7th month, 2 at $7\frac{1}{2}$ months, 7 at the 8th month, 2 at $8\frac{1}{2}$ months ; total, 12,

Abortion occurred in 3 cases—2 at the 5th month, 1 at the 6th month.

Presentations in these cases of Abortion and Premature Labour —Vertex, 9 ; breech, 4 ; transverse, 1 ; abortion outside, 1 (presentation unknown).

Mortality.—Maternal, 1, from acute œdema of the lungs and renal disease, complicated with eclampsia.

Infantile, 4. Of these 3 were premature; and of the premature— (1.) Malformation of bladder and vagina, cystic degeneration of kidneys and convulsions; lived for 36 hours. (2.) Lived for $6\frac{1}{2}$ hours. Post-mortem examination revealed a blood clot which formed a complete cast of the cerebral ventricles. (3.) Lived for 16 hours ; cause of death unknown. The *fourth* infantile death was that of a child at the full term, who lived for $4\frac{1}{2}$ days ; but in this case there was spina bifida in the lumbo-sacral region, and the cranial sutures and fontanelles were widely separated.

Fœtal, 7. Of these 2 were abortions at the 5th month (one of these was the result of accidental hæmorrhage) ; 1 an abortion at the 6th month ; putrid. 1 premature labour at the 7th month ; died during the labour. 3 premature labours at the 8th month. (1.) Monstrum per Defectum—Agnathia[1] (hydramnios). (2.) Skin peeling (hydramnios). (3.) Putrid ; history of injury to the mother from a fall three weeks previously.

Classification of Labours.—Natural, 46 ; laborious (lingering 5, instrumental 8), 13 ; laborious and complex, 1 ; preternatural, 1 ; preternatural and complex, 4 ; complex, 6 ; abortion, 1 ; total, 72.

Of the *Natural Labours* two are of some interest—

(1.) Mrs N., iv-para, æt. 24 (?) Conjugate at brim subnormal. Previous obstetric history, no abortions ; 3 labours at the full time, but children all still-born (all females). In the third labour the cranioclast was used.[2] This, her fourth labour, occurred prematurely at the 8th month. The first stage was very prolonged, the second stage lasted 20 minutes, and the third stage 10 minutes (pains violent in second stage, and chloroform given). Mother and child (female) both did well, and left the hospital on the thirteenth day after delivery.

(2.) E. D., i-para, æt. 20. On 12th January 1886, convulsions; patient taken to Royal Infirmary. Urine scanty and containing albumen. Microscope showed degenerated renal cells, but no tube casts. 24th January 1886, dismissed.

On 22nd March 1886, convulsions; patient conveyed to Maternity Hospital. Urine rather less than normal amount, and a trace of albumen, which disappeared two days later. Microscope negative. Patient had no further convulsive seizures, was delivered on the 3rd April, had a normal puerperium, and left the Hospital with her child on the 15th day of puerperium.

[1] Vide *Ed. Med. Jour.*, July 1886, communication by Dr Underhill.
[2] Vide *Trans. Obstet. Soc.*, vol. x. p. 170.

Laborious.—Lingering, 5.

(1.) Mrs R., i-para, æt. 19, R.O.P. ; 1st stage, 80 hours ; 2nd stage, 3 hours. *Cause*, rigid os. Face to pubes birth.

(2.) J. F., i-para, æt. 19, R.O.P. Rotation effected by manipulation ; 1st stage, 55 hours ; 2nd stage, 1 hour 20 minutes. *Cause*, occipito-posterior position, and the large size of child.

(3.) J. M., i-para, æt. 23, R.O.P. ; but rotation occurred without any artificial interference ; 1st stage, 30 hours ; 2nd stage, ½ hour. child born with an extensive caul reaching to root of neck.

(4.) M. T., ii-para, æt. 29, R.O.P. Face to pubes birth, and the shoulders born in transverse of outlet; 1st stage, 36 hours ; 2nd stage, 1 hour.

(5.) A. L., ii-para, æt. 30, L.O.A. ; 1st and 2nd stages, 28 hours. *Cause*, rigidity of soft parts, and the fact that it is thirteen years since she had her former child.

Instrumental, 8—all low forceps cases.

(1.) G. J., i-para, æt. 24, L.O.A. ; 2nd stage, 14½ hours. *Cause*, inertia uteri, with rigidity of perineal floor.

(2.) J. R., i-para, æt. 17, L.O.A. *Cause*, irregular and feeble pains after the head reached the pelvic floor.

(3.) L. I., i-para, æt. 18, R.O.A. ; 1st stage, 18 hours; 2nd stage, 4 hours 40 minutes. *Cause*, inertia uteri, from fæcal accumulation and rather a small pelvis; narrow vulvo-vaginal orifice. (Fœtal heart was getting feeble.)

(4.) J. D., i-para, æt. 25, L.O.A. ; 1st stage, 20 hours ; 2nd stage, 5¾ hours. *Cause*, inertia uteri, head not advancing beyond the middle of the pelvic cavity.

(5.) C. B., i-para, æt. 25, L.O.P. *Cause*, premature labour (8 months' dead fœtus), delay at the perinæum, pains ceased, and occipito-post position.

(6.) J. S., i-para, æt. 23, L.O.A. ; 2nd stage, 6 hours 5 minutes. *Cause*, inertia uteri, head not advancing beyond middle of pelvic cavity.

(7.) S. H., i-para, æt. 28, L.O.P. ; 1st stage, 19 hours ; 2nd stage, 3 hours. *Cause*, head detained on pelvic floor although the pains were strong and frequent. Rotation occurred.

(8.) M. T., i-para, æt. 23, L.O.A. *Cause*, inertia uteri.

[Nearly all the tedious and instrumental cases in this list occur in primiparæ, some of whom are above the average age of primiparæ (nearer 30 than 20). The chief causes of delay in these cases seem to be—1. Occipito-posterior position. 2. Rigidity of the soft parts between the pelvic outlet and the vulvo-vaginal orifice. Faults of the bony pelvis do not seem to be a cause of delay in these cases, as evidenced by the pelvic measurements.]

Preternatural, 1.

Mrs E. D., i-para, æt. 22 ; breech, L.S.A ; 1st stage, 4 hours ; 2nd stage, 2 hours ; 3rd stage, 1½ hours. Child alive, but small (6 lbs. 10 oz.)

Preternatural and Complex, 4.

(1.) Mrs H., i-para, æt. 21 ; breech, L.S.P., rotating to L.S.A. Accidental hæmorrhage. Patient knocked over by the wheel of a fish van striking her on the chest. Membranes ruptured artificially after admission ; 1st stage, 8 hours ; 2nd stage, 6 hours ; 3rd stage, 0. Fœtus, 7 months, female, dead. Patient left on 13th day.

(2.) J. R. W., x-para, æt. 28 ; breech, foot and hand presented, L.S.A., hydramnios (41¼ inches at level of umbilicus) ; 1st stage, 4½ hours ; 2nd stage, 10 minutes ; 3rd stage, 3¾ hours. Placenta and membranes adherent. Fœtus, 8 months, male, dead. Agnathia and slight hydrocephalus.

(3.) Mrs W., vi-para, æt. 30 ; shoulder, hand, and foot presented, transverse L.A.A. ; pelvis deep, and curve of sacrum exaggerated. Promontory consequently projecting, but C. V. only slightly diminished. Bipolar version before rupture of membranes ; but forceps had to be applied to extract the head from above the brim.   Child, female, 7½ months, dead. Previous obstetric history of two instrumental labours, and the last two labours were miscarriages at the 8th month—one of them being a breech case.

(4.) M. S., vii-para, æt. 31 ; breech, L.S.A. ; hydramnios (43¼ inches at level of umbilicus). Fœtus, male, dead and peeling, 8 months ; 1st stage, 8 hours ; 2nd stage, 1 hour ; 3rd stage, 15 minutes.   In June 1885, placenta prævia and abortion at the 5th month. Patient treated in this Hospital.

Complex, 6.

(1.) M. M., i-para, æt. 16, L.O.A. ; prolapse of cord ; cord also twisted round neck, arm, and shoulder ; placenta adherent, and uterus irregularly contracted on it.

(2.) J. R., i-para (?) æt. 35, R.O.P. ; short forceps ; cervix rigid and hypertrophied from old-standing endocervicitis ; subperitoneal fibroid ; post-partum hæmorrhage ; perinæum rigid ; rupture ; 1st stage, 9 hours ; 2nd stage, 10 hours ; 3rd stage, 1½ hours.

(3.) A. R., i-para, æt. 23, R.O.P., rotating to R.O.A. ; post-partum hæmorrhage ; 1st stage, 21 hours ; 2nd stage, 1½ hours ; 3rd stage, ½ hour.

(4.) Mrs K., ii-para, æt. 29, L.O.A. ; prolapse of cord, and cord twisted round neck and shoulders ; cord, 39 inches long ; child alive ; 1st stage, 10 hours ; 2nd stage, 1 hour 20 minutes.

(5.) Mrs M., vii-para, æt. 36, L.O.A. ; puerperal eclampsia ; child alive, but took a long time to resuscitate.

(6.) C. D., i-para, æt. 22, L.O.A. ; 1st and 2nd stages, 15¾ hours ; C. V., 3½ inches ; puerperal eclampsia ; early acute (glomerular nephritis) Bright's disease.   Patient died the following day from acute œdema of the lungs.[1]

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[1] *Vide* account of P.M. by Dr Bruce, and an account of the case *in extenso.*

Fatal Case of Eclampsia, complicated with Acute Glomerular Nephritis and Acute Œdema of the Lungs.

C. D., i-para, single, æt. 22, full time. The patient's general health was good up to the last month of her pregnancy, and she suffered from none of the disagreeable symptoms which frequently complicate pregnancy. Three weeks previous to delivery she noticed puffiness about the eyelids, and complained of amaurosis, which persisted up to the time of her death. Up to the day of her labour, however, she had not been subject to headaches, convulsions, etc., her only complaint being amaurosis. She looked younger than her actual age, was short in stature, and her face was pale; but she was strong and muscular. Circumference at level of umbilicus was 39¼ in., the abdominal walls being thick and difficult to palpate, owing to anasarca, as was evident by the pitting produced by continued pressure with the finger or stethoscope.

28th April, 3 A.M.—Labour commenced; 7.40 A.M., membranes ruptured; 8–9 A.M., patient admitted; 10 A.M., patient examined. The C.V. was diminished, estimated at slightly more than 3½ in., and the sacro-vertebral was prominent. Os uteri the size of a shilling; presentation vertex; fœtal head in the first position, but not engaged at the brim. Uterine contractions were frequent and powerful, but did not have much effect in dilating the cervix, owing to contraction at brim. (Chloral and Barnes' bags were used to dilate cervix; action slow.) Patient was reported to have micturated copiously and frequently on admission, and to have had a motion of the bowels; but very little urine was drawn off with the catheter on any one of the several occasions on which it was used. The urine contained about 50 per cent. albumen, and also tube casts.

3 P.M.—Convulsions lasting about two minutes, but easily controlled by chloroform. Patient remained insensible for an hour. (Chloral hydrate per rectum to allay tendency to convulsions, ℥ iij. croton oil by mouth, and later jalapin, grs. v.)

5 P.M.—Barnes' bag in vagina caused cervix to dilate rapidly, so that at 6.30 P.M. Dr Underhill was able to apply forceps to fœtal head, now situated half-way down pelvic cavity. Delivery was effected with caution and deliberation under chloroform. Nevertheless there was a slight tear in perineo of the first degree; two sutures were applied. Child (female) born in a state of suspended animation, but resuscitated. The first and second stages lasted 15¾ hours, and third stage ¼ hour, the placenta being expelled by the natural powers.

8.15 P.M.—Second fit, brief and easily controlled. 9.10 P.M.—Respiration becoming frequent and laboured. Physical examination of lungs rendered difficult by patient's restlessness, but dulness on percussion at bases and accompaniments on auscultation were noted. Poultices were applied to the back of chest.

10.15 P.M., and onwards.—Numerous watery alvine evacuations. Patient became extremely restless and difficult to control; her breathing got worse, and she suffered from agonizing thirst, which was not allayed by water, ice, potash-water, or bitartrate of potash, etc. Tongue became stiff and swollen, dark blue, coated, and deeply fissured.

11.30 P.M.—Third and last convulsion, brief, and easily controlled.

29th April.—Respiration more frequent and laboured (44 per min.); pulse irregular, weak, and frequent (130 per min.); and patient evidently much weaker. Stimulants by mouth, and ether hypodermically were given, but patient gradually sank, and died at 2 P.M.

Necropsy by Dr Bruce 25½ hours after death.—Rigor mortis well marked throughout; lividity extensive. No signs of putrefaction. Body well nourished. Muscular development good. Right and left pleural cavities each contained about ℥vj. yellow fluid. Dry pleurisy on both sides. Pericardial sac contained about ℥iij. similar slightly turbid fluid. Recent slight pericarditis.

Left ventricle was considerably hypertrophied. Wall about 1 in. thick. Muscular substance healthy, somewhat anæmic. Musculi papillares strongly hypertrophied.

Aortic and mitral valves competent.

Left lung intensely congested. Lower lobe in condition of commencing pneumonia. Pieces cut off sink in water. Hardly hepatized. Upper lobe intensely congested. Right lung in condition of intense congestion, with commencing hepatization throughout.

Liver enlarged, extremely pale; firm, anæmic, and marked pallor of peripheral zones of lobules.

Left kidney—capsule slightly adherent. Cortex somewhat enlarged, and apparently fatty. Malpighian bodies very distinct, as pale, colourless swellings. Apparent glomerular-nephritis.

Right kidney—capsule very slightly adherent. Cortex somewhat enlarged. Pale Malpighian bodies in a similar condition. Some congestion of vasa recta.

Brain—somewhat œdematous. Marked inequality of vertebral arteries. Left vertebral artery about thrice the size of the right.

Microscopic appearance of Kidneys (by Dr Bruce).—Malpighian bodies very much enlarged. Great increase in nuclei. Epithelial lining of Bowman's capsule proliferating. Tubular epithelium throughout in a condition of cloudy swelling. The lumen of tubules almost entirely obstructed by granular casts. The walls of the capillaries here and there show hyaline thickening, and in places there are some exudations of leucocytes between the tubules.

Malformation of Pelvic Viscera—Infantile Death.

C. D.'s child, female, full time, delivered by forceps (7 P.M., 28th April 1886) in a state of suspended animation, but resuscitated. On following day (29th April) it was reported that child had passed no urine. On examination the rectum and anus were found to be normal, but vagina seemed to be occluded by a tumour which protruded from vulva on forced inspiration. With difficulty a urethral orifice was found, and a No. 2 gum-elastic catheter passed, and a scanty amount of urine escaped; but the vaginal tumour remained, along with dulness on percussion suprapubically. The child had several convulsions during the evening, and died at midnight on 29th April.

Autopsy by Dr Bruce 15½ *hours after death.*—The vagina distended to the size and shape of an ordinary jargonelle pear. Bladder distended to size of a large walnut. Ureters slightly dilated. In kidneys, commencing hydronephrosis. A tough, fibrous membrane closed the urethro-vaginal cloaca. A small uterus was perched on the top of the pelvic aspect of the vaginal tumour.

Puerperium—

(1.) M. S., i-para, æt. 20; 26th January 1886, convulsions and coma, urine containing two-thirds albumen; 31st January, abortion at the fifth month; 1st February, septicæmia. During the next six days patient continued in a critical state, the chief symptoms being rigor, abdominal pain, tenderness on palpation. *Per Vaginam Examination.*—Pain and tenderness, and an inflammatory mass felt in anterior fornix; lochial discharge offensive. Pains in head and joints. Temperature, pulse, and respiration rates all increased. Highest temperature, recorded on fourth day, 103°·4 F.; highest pulse-rate, 134; highest respiration-rate, 42. Pneumonia developed at right base. Bilious vomiting and diarrhœa. After this the patient made a good recovery; but urine still contained albumen on the 30th day of puerperium, when patient was dismissed.

(2.) Mrs W., ii-para, æt. 29; delivered on 23rd January 1886, at which time a presystolic murmur existed. History of acute rheumatism four years ago. Puerperium satisfactory until the eleventh day, when patient had a rigor, followed by abdominal pain and tenderness. An inflammatory mass felt in posterior fornix; lochia offensive; pain in head and joints. Highest temperature recorded, on third day of illness, 105°·8 F.; highest pulse-rate, 120; highest respiration-rate, 57. Pericarditis supervened, also endocarditis (mitral presystolic and systolic aortic). Pleurisy over the greater part of right lung, and over the superior lobe of left lung anteriorly. Pneumonia of inferior lobe of right lung, and pneumonia of left base. Patient improved after the twelfth day of illness. Small

mammary abscess on twenty-seventh day of puerperium.   Patient dismissed on thirty-fifth day of puerperium.

(3.) Mrs C., viii-para, æt. 28.   Had a severe beating on 21st January 1886.   Had a 5½ months' abortion on 27th January. On 1st February she had abscesses at wrist and ankle, also erysipelas, and was removed to Royal Infirmary that day.

(4.) J. B., ii-para, æt. 23; delivered on 25th January 1886. Breasts strapped, as she did not nurse her baby.   Mammary abscess leading to submammary abscess in a patient of a rheumatic tendency, who had periodic rigors and variations in pulse and temperature, with pains in the joints, especially the shoulder-joint. Left breast tender and inflamed on fourteenth day of puerperium. Abscess opened on seventeenth day of puerperium.   Highest temperature 103°·6, and pulse 120.   Dismissed on thirtieth day of puerperium.

[These patients were all delivered in the previous quarter, but their puerperium extended into this quarter.]

(5.) H. D., i-para, æt. 27; delivered on 25th February.   Very slight perineal tear, but numerous fissures at vulvar orifice, with laceration of post-vaginal wall and bruising of the tissues.   Sepsis occurred from these wounds.   Slight rigor on following day.   Highest temperature on fourth day, 103°·4 F., and pulse 130.   No pelvic nor abdominal pain, nor tenderness.   Lochia not foul smelling. Temperature normal on ninth day.   Patient went out well on nineteenth day of puerperium.

(6.) Mrs M., i-para, æt. 20; delivery on 12th March.   Patient hysterical and excited on evening of eighth day of puerperium, with a temperature of 103°·4, and pulse 112.   On ninth day temperature 104° F., and pulse 136.   On tenth day, collapse, with diarrhœa and hæmorrhage from the bowel; temperature fell to 96°·8.   Patient continued in a typhoid condition until 3rd April, after which she improved; but was again thrown back by the formation of a gluteal abscess, probably the result of an injection of ergotine, given to check the hæmorrhage from the bowel.   This was aspirated on 13th April; but as the abscess cavity began to refill, patient was removed to Royal Infirmary on 16th April, the thirty-sixth day of puerperium.

(7.) J. R., i-para, æt. 23.   Rigor and inflammation of both breasts on fourteenth day of puerperium, on which day patient was to have left Hospital.   Abscess threatened, but inflammation subdued, and patient left on twentieth day.   Highest temperature, 102°·2.   In early puerperium patient had a skin rash.

(8.) J. S., i-para, æt. 24.   Slight phlegmasic dolens on tenth day. Highest temperature, 102° F.

(9.) M. S., viii-para, æt. 31.   Hydramnios and miscarriage at eighth month.   On sixth day of puerperium mental exaltation and hallucinations, followed by refusal of food (except on coaxing), with mental depression and suspicions during the next two or

three days. Complete recovery by the end of the first week of puerperium. Temperature never above 99° F.

(10.) Mrs M., viii-para, æt. 36. Subject to fits, and has suffered from head paralysis. On 17th April convulsions and coma. Admitted on 18th April in a comatose state. Numerous convulsive seizures both before and after delivery. Delivered on afternoon of 18th. Became conscious on 20th April. Urine contained albumen and granular casts. Patient behaved in an absurd fashion on the night of 22nd April, but was quite rational next day. Memory, etc., much impaired. Temperature never rose above 99° F. Dismissed on 2nd May.

(11.) F. S., ii-para, æt. 26. Eruption of large and small bullæ on both wrists. Temperature once rose to 100° F., but generally normal.

(12.) E. H., i-para, æt. 22; normal delivery on 15th April. On sixth day, temperature 101° F. On seventh day, slight rigor and headache. Temperature 103°·7, the highest registered. No pelvic or abdominal pain nor tenderness. Lochia normal. On eleventh day temperature 103°·3; on twelfth day, 101°·4; and continued under 102° for the rest of quarter. On fifteenth day (30th April) temperature fell to 99° F. Patient had flushing of one or other cheek or on neck; these flushed patches varied and changed. No lung nor heart symptoms. [In the following quarter patient developed a mammary abscess in right breast (child had been removed from breast), which was opened on 10th May. Dismissed on 20th May.]

(13.) C. D.'s case. Eclampsia, acute œdema of lungs, and renal disease; death in the first twenty-four hours of puerperium. *Vide* special account of the case.

Secondary syphilis in 1 case, i-para, æt. 20.
Tertiary syphilis in 1 case, ii-para (?), æt. 30 (?)
Soft chancres in 1 case, ii-para, æt. 23.
In 61 of the cases the temperature did not rise above 100° F.

State of Perinæum—Rupture occurred in 12 cases, 11 of which were in i-paræ, and 1 in a ii-para (extensive soft sores); 7 were tears of the first degree (1 a hard chancre near fourchette); 5 were tears of the second degree (2 of which were short forceps cases, 1 R.O.P., 1 a high forceps case, and 1 with soft chancres).

Antiseptics.—Corrosive sublimate solution was the antiseptic chiefly used. Vaginal douche with a 1 in 2000 solution used night and morning in each case. This solution was also employed for the hands of those making P.V. examinations. Where the uterine douche was required, the strength of the solution was 1 in 3000 or 1 in 4000, followed by a douche of simple warm water. Carbolic acid solution, 1 in 10, was used for the clothes, etc., and for evaporating in the wards. A solution of 1 in 20, or 1 in 40, where instruments were required.

Ophthalmia Neonatorum.—Credé's prophylactic treatment with a solution of nitrate of silver (10 grs. to ℥i.) was adopted in every case, the conjunctivæ of each infant being touched with a camel's-hair pencil dipped in this solution within the first hour after birth. Three cases of severe ophthalmia neonatorum occurred :—(1.) The mother had extensive soft chancres on both labia and on anterior vaginal wall; also a history of gonorrhœa. (2.) The mother had a hard chancre. (3.) Cause unknown. These cases were cured by daily application of the nitrate of silver solution, and frequent douching with tepid water or a solution of boracic acid (ℨij. to the pint), and smearing the lids with calomel and spermaceti ointment.

Tarnier's cuvette proved of great service, especially in—1. Premature infant of 7 months. 2. Premature infant of 8 months. 3. A puny infant, who had convulsions and facial paralysis the day after birth. The head gradually enlarged, and as gradually returned to former size. Recovery.

Extern Cases.

During this term there were 147 extern cases. Of these 29 were primiparæ, and 118 multiparæ.

Presentations.—Vertex, 127 ; breech, 9 ; transverse, 1 ; complex, 1. There were *two* cases of abortion at the fifth month, and *one* case at the fourth month. There was *one* case of twins. There were *five* cases in which the presentations were unascertained.

Sex of Children.—Male, 83 ; female, 61.

Classification of Labours.—Natural, 124 ; preternatural, 8 ; laborious, 5 ; complex, 7 ; premature, 3. Podalic version was performed twice, viz., in the complex and transverse presentations. Craniotomy was performed in a case of contracted brim and rigid cervix. In this case Professor Simpson's basilyst was used, and answered admirably.

Mortality.—Maternal, 0 ; infantile, 5 ; fœtal, 5.

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